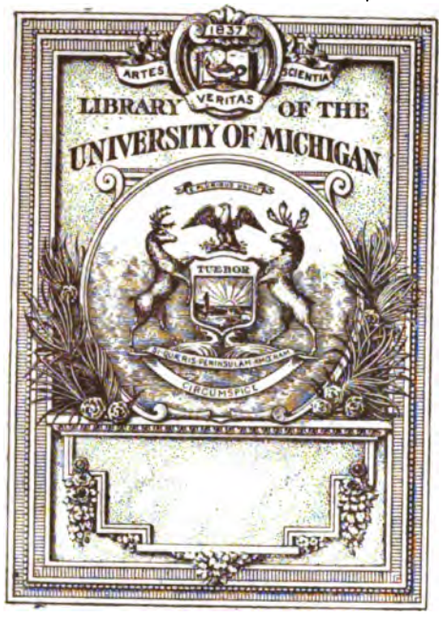
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PLAN OF SEATTLE

MUNICIPAL PLANS COMMISSION

REPORT OF
VIRGIL G. BOGUE
ENGINEER
1911

PLAN OF
SEATTLE

Report of the
Municipal Plans Commission
submitting Report of
Virgil G. Bogue
Engineer
1911

PUBLISHERS:
LOWMAN & HANFORD CO.
SEATTLE

MARRIS & BLAKE, ENGRAVERS
SEATTLE

Seattle

∴

"How beautiful thou art!
Stretching thine arms to greet the Orient;
Gazing with eyes of mystery, to pierce
The far sea-spaces; dreaming, mother-like;
The boundaries of thy power still unset,
The wonder of thy destiny, unknown."

—Alice R. Coe.

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SEATTLE, WASHINGTON,
AUGUST 24, 1911.

MUNICIPAL PLANS COMMISSION,
SEATTLE, WASHINGTON.

Gentlemen:—In submitting the accompanying plan and report, I wish to mention with pleasure and appreciation the names of those who have materially assisted in the work.

MR. D. W. MCMORRIS, as general assistant, has performed invaluable service for which his experience and judgment have especially fitted him.

MR. PAUL P. WHITHAM has shown capabilities of a high order, especially in waterfront matters.

MR. W. L. HOFFEDITZ, as the head of the drafting office, has been untiring in the effort to maintain a high standard of excellence.

W. G. SAYLES, *Locating Engineer,*
JAMES COYLE, *Locating Engineer,*
J. D. MASON, *Assistant on Railways,*
HENRY BAETZ, *Structural Engineer,*
W. H. TIEDEMAN, *Assistant Engineer,*

ALSO

J. D. PATTON, *Draughtsman,*
F. KOEPF, *Draughtsman,*
T. W. MACARTNEY, *Draughtsman,*
M. D. WILKINSON, *Draughtsman,*
G. F. NICHOLSON, *Draughtsman,*
F. DEHLY, *Draughtsman,*
H. C. WILLIAMS, *Draughtsman,*
W. W. CHALK, *Draughtsman,*
R. ELLIS, *Draughtsman,*

have displayed such willingness and ability, each in his own sphere, as to command hearty recognition of their valuable service.

MR. DAVID J. MYERS, architect, who made the drawings of the proposed Civic Center, has not only furnished this proof of marked ability, but also made many suggestions of recognized value.

Of the city engineer and his capable force, I desire to particularly speak: Their willing and timely support has facilitated my every effort. Without it the work undertaken by me would have been far more difficult.

And, lastly, I wish to acknowledge my appreciation of the confidence and kindness of the members of the Municipal Plans Commission, who have entrusted to my hands the guidance of their lofty ambitions for the future of their home city.

Very respectfully,

Virgil G. Bogue.

Report of Municipal Plans Commission

SEATTLE, WASHINGTON, September 7, 1911.

TO THE HONORABLE MAYOR AND CITY COUNCIL OF THE CITY OF SEATTLE:

GENTLEMEN:

In presenting its Report, the MUNICIPAL PLANS COMMISSION deems of interest a brief review of the events leading thereto. While the desirability of a City Plan was urged by certain individuals in public addresses prior to 1909, it was in the early part of that year that the Washington State Chapter of the American Institute of Architects effected a meeting of representatives of the various improvement clubs and commercial organizations in Johnston's Hall to consider active measures looking to that end. The Municipal Plans League was organized at that meeting and while active work was more or less interrupted by the many functions of the Alaska-Yukon-Pacific Exposition which was in progress that summer, it was followed in the Fall by the preparation of an amendment to the City Charter drawn by committees from the Chamber of Commerce, Commercial Club, Washington State Chapter, A. I. A., and the Municipal Plans League acting in conference, which was offered to the voters at the regular election of March 8, 1910, and became a law by the largest majority ever cast for an amendment to the charter of the City of Seattle. The amendment then adopted is as follows:

CITY CHARTER OF THE CITY OF SEATTLE.
(Amended)

ARTICLE XXV.

"SECTION 1. That there be and hereby is created a commission to be known as a Municipal Plans Commission, which shall consist of twenty-one members. It shall be the duty of said commission to procure plans for the arrangement of the city with a view to such expansion as may meet probable future demands. These plans shall take into consideration the extension of the City and City works into adjacent territory; improvement and changes in public utilities and lines of transportation by surface, underground and water; the location, widths and grades of arterial highways necessary for the best treatment of the City; the development of the water front with its sea wall and wharves; the location of public buildings and municipal decorations; and such further extensions of and additions to the park and boulevard systems of the City as it may, in conjunction with the Park Board, find advisable.

"SECTION 2. The members of such commission shall be citizens of the City of Seattle and shall be chosen in the following manner, to-wit: Three shall be elected from the City Council by its members; one shall be elected from the Board of Public Works by its members; in the same way one member shall be elected from the King County Commissioners; one from the Seattle Board of Education and one from the Seattle Park Commission. The other members shall be appointed by the Mayor in the following manner, to-wit: Each organization hereinafter named shall nominate two of its members and the Mayor shall appoint one of the two so nominated. The interests representing the water front owners, steam railway companies, street railway companies and marine transportation companies shall organize, respectively, by mass meetings, at which a chairman and secretary shall be elected, and such officials shall certify to the Mayor the two names elected at such meetings. The call for such meetings shall be given publicity in the press of the city:

"The Pacific Northwest Society of Civil Engineers.
"The Washington State Chapter of American Institute of Architects.
"The Seattle Chamber of Commerce.
"The Seattle Commercial Club.
"The Manufacturers' Association.
"The Central Labor Council.
"The Seattle Clearing House Association.
"The Seattle Bar Association.
"The Seattle Real Estate Association.
"The Carpenters' Union.
"The Waterfront Owners.
"The Steam Railway Companies.
"The Marine Transportation Companies.
"The Street Railway Companies.

"In case of failure of any of said organizations or interests to nominate, then these members are to be appointed by the Mayor, and each shall be chosen for his known qualifications with respect to the interests which shall have failed to certify its nominations.

"SECTION 3. Any member of such commission may hold any other office, whether federal, state, county or municipal, or may be an employe of the city or of any other department, commission, board, bureau, institution or office of the city government, and by becoming a member of such commission, no person shall forfeit any other public office or employment which he may hold at the time he becomes a member.

"SECTION 4. Before entering upon the duties of their office, all members shall qualify by taking the oath of office prescribed for city officials in the City Charter, and shall organize by electing a president and secretary.

"SECTION 5. After the organization of such commission, any member except a state, county or city official, who shall be absent from the meetings of said commission for a period of more than thirty days, without being excused therefrom, shall *ipso facto* forfeit his office; and any vacancies caused either by resignation, death or by reason of unexcused absence, shall be filled by appointment in the manner provided for in Section Two (2) of this Resolution; such new commissioner to be chosen to represent the same body as that rep-

resented by the one causing the vacancy. The failure of a city official to retain his office in the city government shall be considered a vacancy on said commission and his successor shall be selected as hereinafter provided.

"SECTION 6. All members shall serve without compensation.

"SECTION 7. There shall be furnished to said commission suitable quarters for the carrying on of its investigations, together with such engineering and clerical assistance as may be necessary, and the commission shall, as soon as practicable after its organization, employ one or more, but in no case to exceed three, men of national reputation, recognized as authorities in city planning to prepare a comprehensive plan under its direction and subject to its approval and adoption, embracing in its scope the entire area of the city, and such contiguous territory, as is comprehended in Section One (1) of this Resolution. The final plans shall be submitted to the Commission for approval, and shall be regarded as approved, unless rejected by a two-thirds vote of said commissioners within thirty (30) days after the same shall have been filed with the commission. The Municipal Plans Commission shall hold regular meetings; at least one such meeting every two weeks. Upon the conclusion of the sittings of said commission it shall submit its findings in full to the Mayor and the City Council of Seattle in printed form, together with plans. Said report shall be presented to the Mayor and City Council not later than September 30, 1911, and they shall cause the recommendations of the commission to be submitted to the people at the next general or special election.

"SECTION 8. That if a majority of the voters voting thereon shall favor the adoption of said City Plan so reported, it shall be adopted and shall be the plan to be followed by all City officials in the growth, evolution and development of said City of Seattle, until modified, or amended at some subsequent election.

"SECTION 9. There is hereby created a fund to be known as 'Municipal Plans Commission Fund,' which shall consist of a tax levy to be made during the year 1910 as other taxes are levied, of one-fourth (¼) of a mill on the dollar, but no other or further levy or payment into said fund shall ever be made. The Municipal Plans Commission shall have exclusive power to pay out moneys from such fund for any and all purposes specified in Section One (1) hereof, and shall, on or before the 10th day of August of the year 1910, prepare and submit to the City Council for approval and adoption, an estimate of the amount of money which may be required for its purpose, in conformity with Chapter 138 of the Laws of State of Washington, Session 1909.

"SECTION 10. All expenditures on account of work done shall be made upon vouchers approved by a majority vote of the Municipal Plans Commission and signed by its president and secretary. Each voucher shall, when accompanied by a detailed statement of such expenditures, be certified to the City Comptroller, and shall be paid by the Treasurer out of any money in the Municipal Plans Commission Fund not otherwise appropriated. Said commission may anticipate the revenues to be paid into said fund under the tax levy herein provided for, by the issuance of its warrants against said fund, to provide money for the necessary expenses of said commission prior to the availability of the funds to be raised by such levy. No expense against such fund shall be incurred after September 30, 1911, nor in excess of the levy provided, and any

surplus remaining in said fund after said date, now lawfully appropriated or obligated for shall be by ordinance transferred into the General Fund."

(See Mayor's Proclamation dated March 11, 1910.)

Although certain legal objections to the amendment were raised, these technicalities were adjusted within the following three or four months and in accordance with the provisions of the act the following men were named to serve on the Municipal Plans Commission:

MAX WARDALL, representing The City Council.
A. F. HAAS, representing The City Council.
WM. H. MURPHY (Resigned Mar. 8, 1911), representing The City Council.
A. J. GODDARD, representing The City Council.
F. P. MULLEN (Resigned Mar. 8, 1911), representing The City Council.
R. H. THOMSON, representing The Board of Public Works.
A. L. RUTHERFORD, representing The County Commissioners.
M. J. CARRIGAN (Resigned Jan. 12, 1911), representing The County Commissioners.
EDMUND BOWDEN, representing The Board of Education.
J. T. HEFFERNAN, representing The Seattle Park Commission.
R. H. OBER, representing The Pacific Northwest Society of Civil Engineers.
W. R. B. WILLCOX, representing The Washington State Chapter of American Institute of Architects.
C. J. SMITH, representing The Chamber of Commerce.
J. D. JONES, representing The Seattle Commercial Club.
HENRY DRUM, representing The Manufacturers' Association.
W. J. ONSTOTT, representing The Central Labor Council.
J. W. MAXWELL, representing The Seattle Clearing House Association.
F. E. BRIGHTMAN, representing The Seattle Bar Association.
GEORGE B. LITTLEFIELD, representing The Seattle Real Estate Association.
N. R. HOGG, representing The Carpenters' Union.
KENNETH MACKINTOSH, representing The Waterfront Owners.
JAMES ANDERSON, representing The Steam Railway Companies.
J. C. FORD, representing The Marine Transportation Companies.
NORWOOD W. BROCKETT, representing The Street Railway Companies.

The Commission convened for its first session in the City Council Chamber at 8:00 P. M., June 3, 1910, and proceeded with its organization, which was completed at the next meeting, as follows:

President, KENNETH MACKINTOSH *Secretary,* NORWOOD W. BROCKETT

LIST OF COMMITTEES

EXTENSION OF CITY AND CITY WORKS INTO ADJACENT TERRITORY: R. H. Ober, Henry Drum, W. L. Onstott, A. J. Goddard, Max Wardall.

IMPROVEMENT AND CHANGES IN PUBLIC UTILITIES AND LINES OF TRANSPORTATION: C. J. Smith, J. D. Jones, N. W. Brockett, Edmund Bowden, James Anderson.

LOCATION, WIDTH AND GRADES OF ARTERIAL HIGHWAYS: R. H. Thomson, J. C. Ford, A. F. Haas, J. W. Maxwell, Henry Drum.

DEVELOPMENT OF WATERFRONT: A. J. Goddard, F. E. Brightman, J. C. Ford, J. T. Heffernan, Kenneth Mackintosh.

LOCATION OF PUBLIC BUILDINGS: A. L. Rutherford, C. J. Smith, N. R. Hogg, A. F. Haas, W. R. B. Willcox.

PARKS AND BOULEVARDS: Edmund Bowden, J. T. Heffernan, George B. Littlefield, W. L. Onstott, R. H. Thomson.

FINANCE AND AUDITING: M. J. Carrigan, A. L. Rutherford, Max Wardall, N. R. Hogg.

EXECUTIVE COMMITTEE: Chairman ex-Officio, Kenneth Mackintosh, R. H. Ober, C. J. Smith, R. H. Thomson, Wm. H. Murphy, A. J. Goddard, A. L. Rutherford, Edmund Bowden.

Regular sessions have been held every second Thursday since the date of the first meeting and in addition thereto a number of special sessions have been held. At many of the meetings, citizens and improvement clubs interested more especially in some one phase of the work, have appeared before the Commission to offer suggestions and to discuss matters under consideration. The Chamber of Commerce and the Commercial Club have kindly opened their quarters for the larger gatherings, while the Municipal League has been active in familiarizing the public with the character and scope of the project.

Pursuant to the Charter Amendment, the Commission at an early date secured the services of Mr. Virgil G. Bogue.

Mr. Bogue, a man of learning and of international reputation as an engineer, graduate of the Rensselaer Polytechnic Institute, began professional work on the engineering staff of Prospect Park, Brooklyn, under Frederick Law Olmsted, Sr.

Shortly thereafter, the range of his activities rapidly expanding, he located and built the mountain sections of the world famous Trans-Andean Railway in Peru; built the most intricate and difficult portions of the Northern Pacific Railway, discovered and named Stampede Pass in the Cascade Mountains; acted as consulting engineer in connection with railways and other public works in the United States, Mexico, Central America, New Zealand, Nova Scotia and Alaska; built the Western Pacific Railway and its ocean terminals on San Francisco Bay, as well as those of the Western Maryland Railroad Company at Baltimore; was chief engineer of the Union Pacific Railroad for some years and served as special consulting engineer for Mayor Strong of New York City, dealing with various phases of municipal development.

His work in connection with the waterfront facilities in Seattle and Tacoma is well known. His long and varied experience with problems of a character likely to arise and vitally affect the City of Seattle, recommend him for the work to be undertaken.

With Mr. Bogue's arrival in September, 1910, office and draughting space was obtained in the Central Building and actual work upon the solution of the innumerable problems involved and the preparation of the final plan was at once undertaken and has proceeded without interruption to the date of final adjournment. The several committees have met with varying frequency as their respective duties seemed to demand.

The extent of the undertaking will be apparent upon a perusal of Mr. Bogue's report and an examination of the accompanying maps and illustrations, as well as upon a review of the financial summary following:

FINANCIAL SUMMARY

Expert			$17,327.48
Engineering—			
Office		$16,565.74	
Field		7,286.71	
			23,852.45
General Expense—			
Furniture and Fixtures		$ 979.03	
Stationery and Printing		541.41	
Office—			
Salaries	$ 1,165.75		
Expenses	1,992.00		
Rent	1,256.00		
		4,413.75	
			5,934.19
Printing Report			2,500.00
Total Expenditure			$49,614.12

At the outset it was essential to determine the range of the task and after considerable debate, in view both of the instructions contained in the Charter Amendment that the plan provide for the "future demands" of the city, and for the inevitable large increase of population, it was decided that the plan should embrace an area of about 150 square miles, which, at 7,000 inhabitants per mile —an average density of population of American cities comparable in rate of growth to Seattle—would provide for a population of slightly over a million inhabitants. (See Map No. 20.)

That such a plan would of necessity appear to conflict and interfere with present conditions of certain properties was, of course, clear from the first, but since any extensions or improvements entered upon from time to time without the assistance of a well prepared plan, would be sure to affect properties in a similar manner, it was a matter which could be regarded only to the extent that throughout its development results should be obtained with the least possible disturbance of existing conditions, while still securing, in the course of twenty-five, fifty or a hundred years, a consistent and harmonious city in all its various relations.

By vote at a late meeting the Commission recommended that in the future Harbor Island be known as the "Semple Terminal" in recognition of the interest shown by Engene Semple in its development.

By the citizens of Seattle who believe in the city's continuous growth and expansion the certainty of improvements reaching over wide areas, extending through a long series of years, is foreseen. It is faith in such a future and the purposeful intention to make its reality measure up to that faith that has led to the preparation of the accompanying plan and report. The extent of the entire project set forth is vast, but as from time to time the various undertakings shall be required to meet the needs of an increasing population, so will the increase of population furnish the means of accomplishment.

The plan is elastic, its adoption does not require any expenditure whatsoever; nor does its adoption exclude changes and improvements not specifically provided for therein. Its adoption means simply, the acceptance of it as a

plan of action, a method of procedure, and that when changes and developments are initiated by the people, authorized by their vote and ordered by the City Council, they shall be made systematically and in conformity with the plan. It means the ultimate saving of vast sums which in the absence of a uniform system would be wasted. It proposes for all city improvements and developments a unified plan such as has been furnished for the park development by the Olmsted plan.

If the need for the fulfillment of any portion of the plan does not arise, the fact that it is embodied in the plan does not require that it be undertaken or that money be expended thereon. On the other hand, whenever in the minds of the people, conditions do require the fulfillment of any portion of the plan and funds are voted therefor by them, it may be entered upon with every assurance of its permanent character and lasting utility.

In the development of the plan the Commission has come to a forceful appreciation of the fact that the diverse interests and activities and the various sections of the city are so interwoven as to making a simplified general plan a necessity. It is the firm belief that, through the untiring and skillful services of Mr. Bogue, this necessity has been met.

This Commission does, therefore, recommend for adoption, by the citizens of Seattle, the plan presented in the following report.

Signed:

AFFIRMATIVE	NEGATIVE
EDMUND BOWDEN	A. L. RUTHERFORD
F. E. BRIGHTMAN	MAX WARDALL
NORWOOD W. BROCKETT	A. J. GODDARD
HENRY DRUM	
J. T. HEFFERNAN	
N. R. HOGG	
JOS. D. JONES	
GEORGE B. LITTLEFIELD	
KENNETH MACKINTOSH	
J. W. MAXWELL	
W. J. ONSTOTT	
C. J. SMITH	
R. H. THOMSON	
W. R. B. WILLCOX	
A. F. HAAS	
R. H. OBER	
JAMES ANDERSON	
J. C. FORD	

Introductory

CITY PLANNING, as we regard it today, is but the development of the Civic Idea, old as the human race. Of prehistoric man there still exist traces of activities which could have only meant preparation for a probable population of the future. Among such testimonies of the dim ages of the past are the earth mounds of America and the lithic structures of Stonehenge, England.

Savage races have always set up their shifting abodes of huts or tents around a common center, for purposes of mutual defense against beasts or human enemies.

The ancient civilizations of Peru and Mexico have left remnants of monumental structures typifying apparently the acme of their civic tendencies. Persia, in wasted wrecks of mammoth works, and Egypt, in her temples and pyramids, have given us a vision of their highest civic attainments. Babylon, in her Hanging Gardens, possessed what was known as one of the "Seven Wonders of the World."

Every school boy of today knows of the civilizations of ancient Greece and Rome. Their triumphs of public and private attainments have been in his mind and on his tongue from the earliest days of student life. And, with advancing years, we all find that the story in its entirety was not handed down in the *written* records of their glories. Governmental excavations are constantly emphasizing the fact of a high civic attainment, protective and sanitary, which was lost in the swift decline of power of the Governors and Law-givers of the world. But the influence of their ideals only lay dormant during the succeeding ages of accumulating ignorance and degradation, which trod upon the heels of barbaric invasion, all over the then-called Western World.

It awakened with the reveille of the Renaissance. It emulated the old standards in science, art and common life, and Civic Propriety focused its speaking ambitions.

Again rose law-givers and commerce-seeking mariners, and again the life of the town clustered about a common forum, where were discussed mighty matters of interest, civic and individual, as witness the Rialto of Venice, commercial queen of the seas .

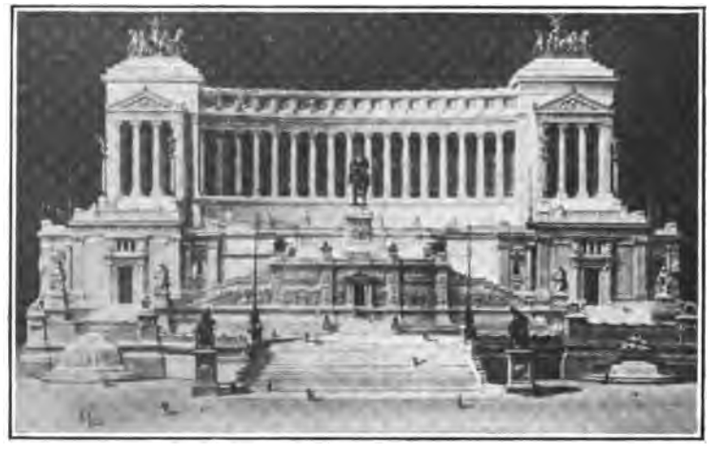
Isolated baronial and feudal life, the life of the times, grown semi-barbaric and wholly anarchistic, vanished in the searchlight of that period of glory. Cities again represented the acme of government and development.

It is unnecessary, for the purposes of this report, to trace categorically the persistence of the CIVIC IDEA through the years from the Renaissance to the present time, with its varying shades of intensity and effective expression. Suffice it to observe that in a manner commensurate with their grasp upon the higher civic virtues, all people have sought to manifest in lasting form, their pride, their loyalty and their faith. Indeed, such outward aspects reveal the strength and purpose of their inner life.

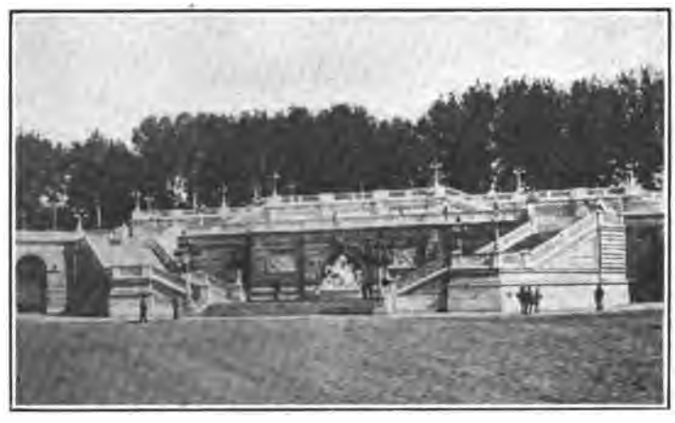
By methods reminiscent of the military glories of ancient Rome, Napoleon

Seattle Waterfront, 1870

A Portion of Seattle Waterfront, 1910

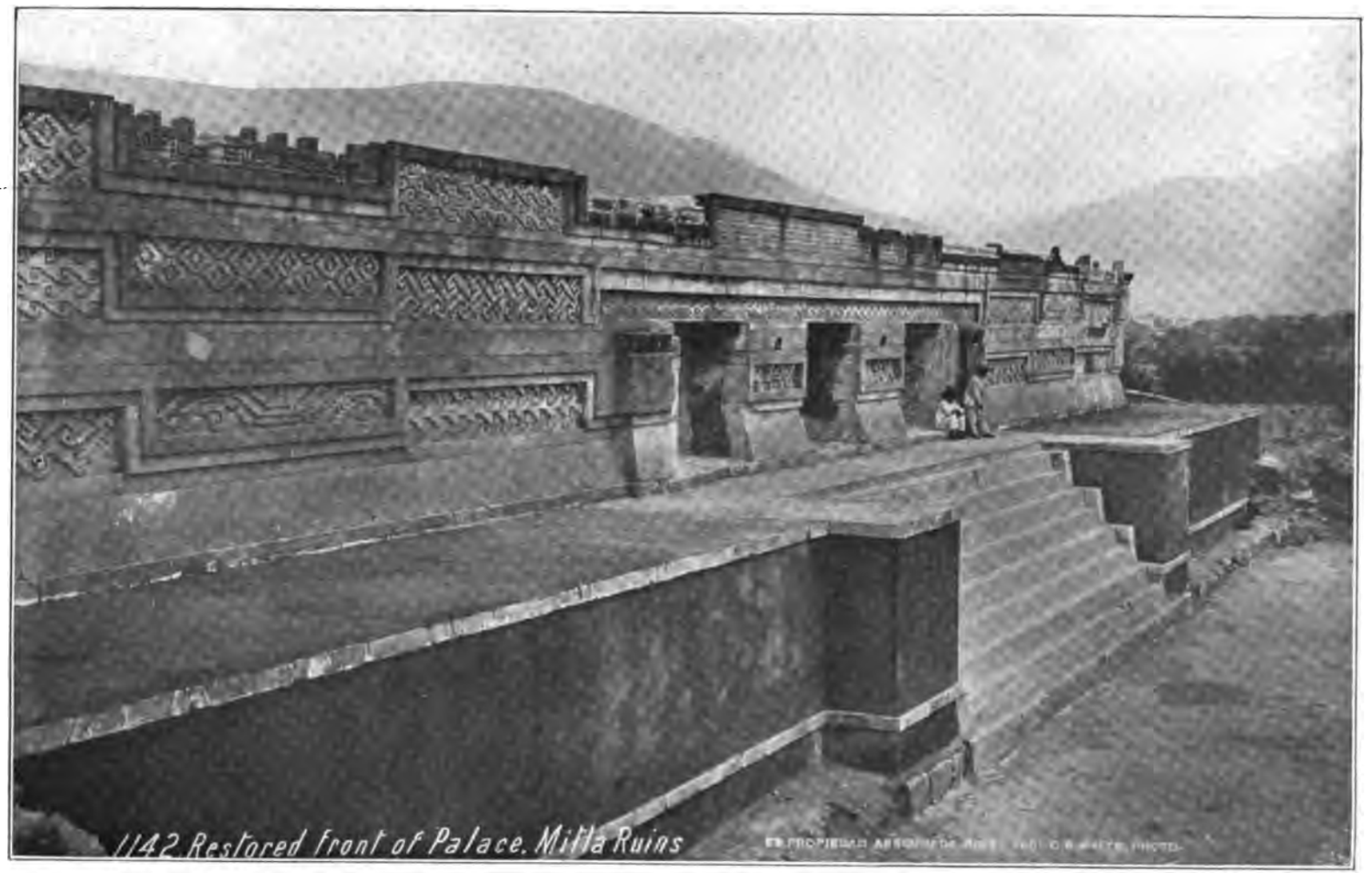


Monument to Victor Emanuel, Rome



Approach to Public Gardens at Railway Station at Bologna, Italy

Central Avenue, Rio Janeiro



Restored Front of Palace, Mitla Ruins, Mexico

Ruins of Greek Temple, Paestum, Fifth Century

Ruins of Egyptian Temple, Edfu

Bonaparte, in far-seeing plans for the growth of Paris, gave direction to an initial expression of the city's authority and power.

Washington and L'Enfant, with faith in the awakening of the still dormant CIVIC ambition of the leaders of a new government, prepared the way for its later worthy manifestation and development, in conceptions of order, convenience, variety and grandeur.

It is, however, in a review of the last fifty years that we can best measure the gathering force of this Civic Consciousness; a consciousness demanding recognition of organic unity and intelligent system; recognition of the fact that community life is not an aggregation of unrelated parts and functions, an agglomeration; but a growth, a product, whose many elements are virtually interwoven and inter-dependent.

We have seen cities whose inactivity had permitted blunders to stunt and impede their growth, come to admit the errors of former years and bravely face the stupendous tasks necessary to remedy them. We have seen how this tardy acknowledgment has given substantial shape to their ambitions, and how undreamt of resource, commerce, distinction and honor have been the satisfactory result.

Paris, under the direction of the lawyer, Haussmann, Prefect of the Seine, not only prepared outlying areas for the extension of the city, but cut great avenues through mazes of tangled streets and replaced noisome and congested districts with spacious squares. Imposing structures of a former day were freed to view, and provision was made for others yet to come. Obligations, amounting to hundreds of millions, were assumed; yet, only a few years ago, upon the completion of works first undertaken in 1850, conscious of the advantage accruing from radical improvements thoughtfully devised, her people immediately appropriated one hundred and fifty millions for the accomplishment of further similar projects. Fifteen years, it is said, were given to the study of these latter plans, and a longer period shall doubtless have passed before they come to final fruition.

London today is struggling to rid herself of wasteful confusion and evil congestion at a tremendous cost, a price which measures the surprising indifference and short-sightedness of her earlier citizens, when, after the ravages of the great fire of 1666, they turned deaf ears to the emphatic and earnest suggestions of Sir Christopher Wren, one of the grandest architects the metropolis has ever known.

In the face of an opportunity such as was likely never to return, Wren strove for the adoption of a new scheme of street arrangement which would not only have obviated the latter day crushing expense of town betterment, but have at once brought inestimable benefits in its train, providing for the free movement of increasing traffic through all the years and insuring the dense population a better form of life. It would have transformed her from a town of mean, if picturesque, aspect, to one of breadth and dignity. But those self-seeking and distrustful qualities, which so often defeat the truest progress negatived his proposition and wrought their own condemnation.

In Italy, Milan has felt the modern impulse.

Florence, within a few years, has rid herself of a slum district, to make place for the great Piazza of Victor Emanuel.

Genoa has equipped a great port and constructed imposing streets.

Bologna is completing structures begun in the Renaissance.

Rome, too, expressing the third revival of her civil spirit, has, within the year, dedicated the sumptuous monument to Victor Emanuel, a work said to be worthy of comparison with the best work of Ancient Greece and Rome. Other far-reaching improvements are in course of preparation.

Hamburg and Bremen and Antwerp have developed their waterways to handle with dispatch a great international commerce. Dresden, Berlin, Vienna, Stuttgart and Buda Pesth, by the acceptance of the broadest conception of municipal development, and the grasp of opportunity, have, within a quarter of a century, become model towns in every respect.

Brussels has attained the rank of a lesser Paris.

During the last two decades the great South American cities of Rio de Janeiro and Buenos Aires have, by heroic undertakings, won places among the magnificent cities of the world; and even the old cities of the South Pacific Coast have maintained a steady growth and development of latter-day ideas.

Perhaps of all the cities of the Old World, it has been those of Spain which, ever since the time of the Moors, have recognized and most clearly expressed, in their arrangement, the essential unity of all civic interests. With them *centralization* has ever been the dominant characteristic. Where almost every undertaking contained some expression of belief in Omnipotent Power and Protection, it was natural that the religious and municipal ideas should be co-manifest.

Hence it is that in Spanish cities the cathedrals and government buildings occupying positions subordinate thereto, surround broad central plazas, from which radiate all the important thoroughfares. There centers the life of the cities; and there congregate their people; and thence flow all religious, governmental and intellectual authority and influence.

In our own country, while community interest was clearly defined in many of the early settlements, taking the form of a common field, about which the houses congregated, and into which enclosures the cattle were gathered at night and at times of attack by natives, and while, in the natural order of things, the church, the school and the town hall took their places facing upon the green, this order tended to pass away with the advent of more settled conditions.

The sense of civic responsibility slumbered during the rapid development of a new country of incalculable resources.

The lure of wealth fevered the popular imagination. Productive and commercial activities increased with tremendous rapidity. Cities sprang up everywhere to serve these purely material ends and, with irresponsible license, as is said of Topsy, "*just growed.*" Such direction as their development did receive was, more often than not, at the hands of self-interest or of leaders ignorant of patriotic and civic prepossessions.

In 1893, Chicago, exhilarated by an unparalleled growth in population and material prosperity, was stirred to an appreciation of the Civic Idea. With the confident slogan "I WILL," her citizens joined in a demonstration of her claim to a position among the great communities of the world. The Columbian Exposition gave Chicago opportunity to visualize her own future, when the ephemeral grandeur of the White City might be crystallized in enduring form, expressive of her ideals. Out of that opportunity have come plans for ultimate civic attainment commensurate with her future size and importance.

Her example has aroused to emulation cities North, South, East and West.

New York, with surprising unconcern, permitted streets to be extended with monotonous regularity, without regard for the efficient handling of heavy traffic, or the sanitary housing of an enormous population. To such limits did an ignorant disregard of the future needs of the city earlier prevail that a proper proportion of open air space was left unprovided, a blunder which has been partially corrected, at a cost, in some instances, of a million dollars an acre.

With similar lack of foresight, a federal building of inferior design was permitted to encroach upon City Hall Park, and the close proximity of towering buildings of lesser dignity has dwarfed and crowded the beautiful City Hall, while other municipal buildings such as the exquisite Appellate Court in Madison Square, have been forced to occupy insufficient areas, amid unworthy neighbors, in other parts of the city. How great would have been the reciprocal advantages could these buildings have been grouped in an ample setting! What a notable improvement would have resulted from the location near them of the new Library and the new Post Office!

Another phenomenal error, committed in the same vicinity, was the disfiguring approach to the great Brooklyn Bridge. With wiser provision for both present and future, and an expenditure not so much greater as to make the scheme prohibitive, the approach to a world-famous achievement might not only have been made worthy of the monument to which it led, but have so beautified and improved the whole locality as to have raised environ values long ago and made almost incalculable changes in the appearance of that part of Manhattan Island. On the Brooklyn side, the mistake was even greater; laying waste a part of Brooklyn's business area and retarding immeasurably her advance in civic dignity and beauty. The realization has come, however, that the present lack of practical arrangement was the result of false ideas of economy and short-sighted policy, with no look even to the near future, and that proper correction must be made, despite enormous outlay and inconvenience.

With respect to essentials in city planning, the Improvement Commission of New York reports:

> "The Commission is very strongly of the opinion that the grouping together of public buildings is an essential part of any comprehensive scheme of city improvement, which is to give the city an appearance worthy of it, and on a par with the other great cities of the world."

Washington, D. C., has pledged adherence to a revision of her first admirable plan made necessary by thoughtless disregard of its many excellencies. While yet far from completion, the work already accomplished foreshadows a World Capital than which none will be more beautiful. Thoughtful, careful planning, and studied design, have offset a lack of natural advantages such as few cities suffer from, and will exemplify the service of Art rather than Nature in the equipment of a modern city. Without her central Mall, grouped buildings and radiating avenues, even with the same sums expended upon her public edifices, Washington would be a far less attractive city than the one we know or are able to forecast for the future.

Cleveland, with an initial expenditure of $10,000,000 for sufficient area, is emphasizing the Civic Idea by the creation of an Administrative Center of monumental proportions, facing which are arising, one after another, municipal buildings and a Union Station. St. Louis is elaborating a similarly ambi-

tious scheme. Every obstacle that an earlier lack of organized plan can provide is being overcome by the determination of Kansas City to prepare herself for a worthy and serviceable career. Pittsburg has taken the first step toward improvement of conditions so deplorable as no longer to be endured. Buffalo is occupied with far-reaching changes. Milwaukee and Detroit, effectively situated on the shores of the Inland Seas, look forward to the consummation of efforts of a similar kind, and already feel the impetus which the increased interest of the outside world in their successful development, creates. Philadelphia, whose central square was obliterated by the erection of an ungainly city building in years gone by, and with a street plan devoid of interest or commercial efficiency, is repairing the error, as far as possible, by extensive works in various directions.

In a recent account of progress made by the City of Rochester, one may read:

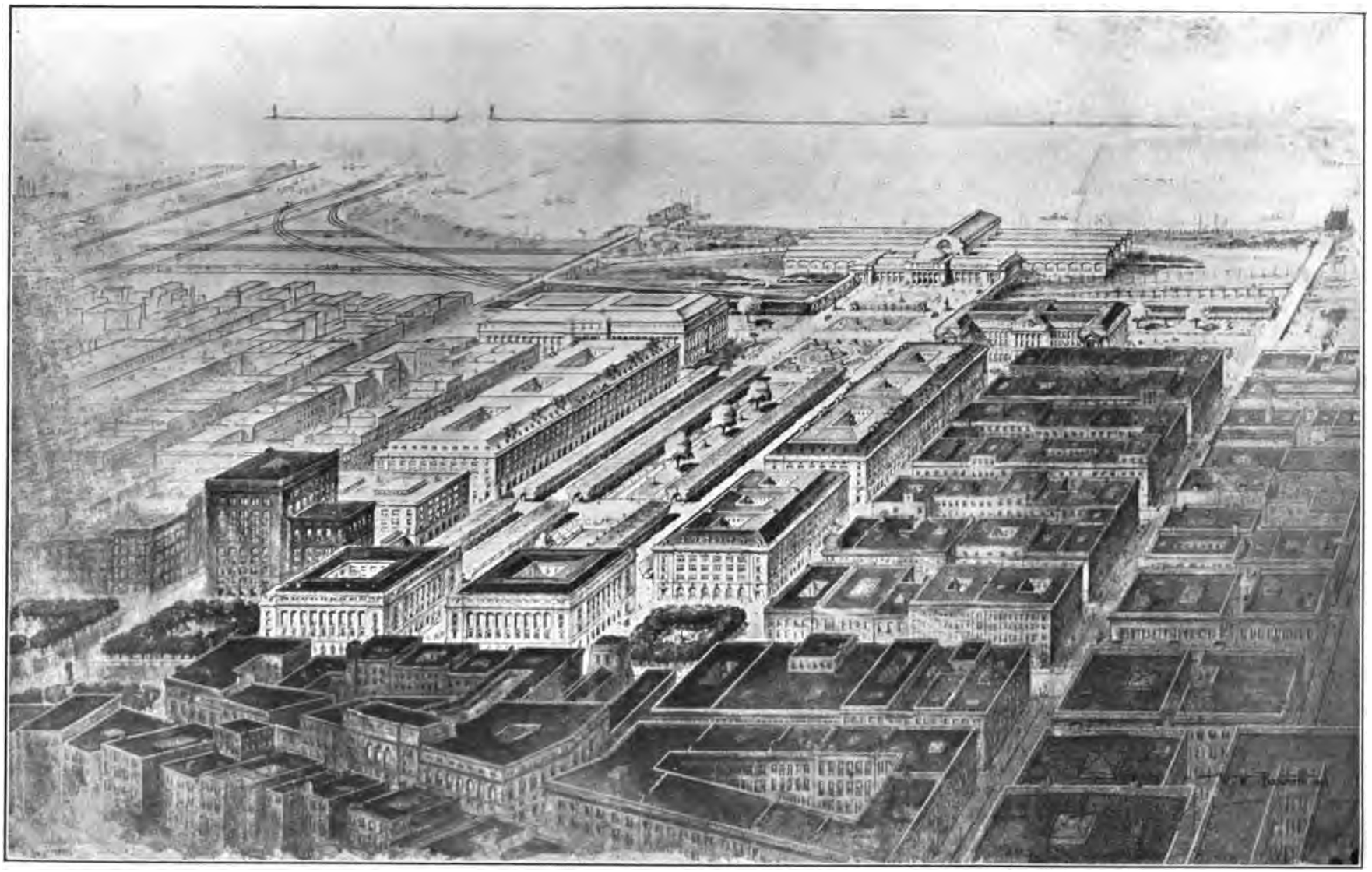
> "The Cleveland proposition, however, differs from the Rochester plan. In the former city certain public buildings had to be grouped about a common center; in the latter there is not only that necessity, but also the re-planning of local transportation. Rochester has long been known as an exceptionally prosperous and pleasant town. What occasion, then, is there for improvements? It is because Rochester is as intelligent as it is prosperous that it takes steps in time to meet the changing conditions forced upon it by its own growth. In the absence of improvement, as its Civic Commission contends, deterioration must come. The City Hall, as a civic center, was first considered. The Rochester City Hall is not only too small, but is architecturally unworthy. A new site must be found, a new building planned."

Minneapolis and St. Paul, twin cities of the north, are vying with each other in undertaking municipal improvements with which to satisfy civic pride. Omaha, Memphis and New Orleans join in the general advance. Baltimore is fighting obstacles in the way of general betterment. Los Angeles, a marvel of municipal ambition, is leaving nothing to chance, and making every sacrifice of purely personal interest to meet the requirements of a great and prosperous city, such as her citizens have faith to believe she is destined to become. Already her list of achievements is long.

Portland, Oregon, has a plan of improvements for adoption, while San Francisco, in the face of appalling disaster, has given evidence of undaunted courage and of unflinching purpose, to sustain the reputation and appearance of a world city.

Space need not be taken to mention the innumerable smaller cities and towns which, often under grievous discouragements, are striving to achieve their ambitions for civic betterment.

Enough has been said to illustrate the persisting force of the Civic Idea and its outward expression in intelligently planned thoroughfares, improved commercial facilities, grouped architecture and decorated plazas, bespeaking municipal authority, intellectual attainments and aesthetic appreciation.



Civic Center Project, Cleveland, Ohio

Seattle, 1878

Arterial Highways

INTRODUCTORY REMARKS

(See Appendix No. 1 for detailed descriptions)

THE correct planning of a city requires its lines of transportation to be so arranged as to provide the best facilities for traffic. The ideal arrangement of main arteries is that which will enable traffic to flow from any point in the city to any other point, in the most direct manner and on the best grades.

This is effected by a system of radial streets leading from the business area and center. To avoid congestion at the business center, where possible, a circumferential street may be planned. toward which traffic will gravitate and into which radial arteries will lead. In this way business will flow around the congested center rather than through it, avoiding excessive congestion. At intervals circumferential streets should be introduced, to better enable the traffic to reach all parts of the city and yet be confined almost entirely to the main arteries.

In Seattle topographical conditions largely prevent such a system, and yet the main features, that is the radial streets, may be substantially arranged with no serious difficulty, and diagonals, instead of circumferential streets, may be so located as to conform to the lines of travel.

It is somewhat difficult to adapt a new diagonal to the grades of existing streets, but, on the other hand, the advantages presented by this diagonal offset obstacles to its location.

The fixing of widths of new streets and arteries is a subject of great range, but, with the expansive traffic of modern cities and towns, the people have shown more liberal views and adopted a wiser policy. In many cases old cities have been compelled to widen existing streets, or to open up new ones at vast expense.

The Royal Commission on London traffic, in the reports under date of 1905, states that:

> "The chief difficulty that stands in the way of improving the means of locomotion in London is the narrowness of the streets and the fact that they were not originally laid out on any general plan."

This Commission recommended the following widths:

> "Main avenues, 140 feet wide; first-class arterial streets, 100 feet wide; second-class arterial streets, 80 feet wide; third-class, 60 feet wide; fourth-class, 40 feet wide or 50 feet wide; width in each case to include foot-ways on either side, and no streets should be less than 40 feet wide."

The following table is a comparison of widths of important streets in Europe with those of London:

Avenues des Champs Elysees, Paris	250 feet
Reeperbahn, Hamburg	210 "
Unter den Linden, Berlin	190 "
Ring-Strasse, Vienna	185 "
Belle Alliance, Strasse, Berlin	160 "
Andrassy, Buda Pesth	145 "
Avenue Henri Martin, Paris	130 "
Potsdamer Strasse & Fredrich Wilhelm Strasse, Berlin	110 "
Avenue de l'Opera & Parisian Boulevards	98 "
Whitehall, London	120-145 "
Victoria Embankment	120 "
Holborn Viaduct	90 "
Regent Street Quadrant	85 "
Picadilly	75 "
Queen Victoria Street	70 "
Princess Street & George Street, Edinburgh	100 "

The Advisory Board of Engineers to the above Royal Commission proposed, among other improvements:

> "Two main avenues through London, one from west to east, to connect Bays Water Road with Whitechapel * * * and the other from north to south to connect Holloway with the Elephant-and-Castle * * * each avenue to be 140 feet in width between property lines. The east and west avenue is to be four and three-quarter miles long and the north and south avenue about four and one-quarter miles long."

These avenues, with subways, railways and tramways would involve an aggregate net cost of over $120,000,000.

In New York, Upper Fifth Avenue, at great expense, is being widened to obviate street congestion. It has also been seriously proposed to open a new avenue north and south, between Fifth and Sixth Avenues, at a cost of possibly $150,000,000.

In fixing the widths of highways to accommodate such traffic as may develop in the future, it is necessary to exceed, by a good deal, the needs of the present. The improvement of these highways should be made in such manner as to permit future growth.

The arterial roadways in outlying districts should be of liberal width; the walk should be placed adjacent to or near the property line, and in first development a grass plot may be left between the walk and curb. On strictly arterial highways, trees should not be permitted between the curb and the walk, because if trees are once established it is difficult to cause their removal in order to make necessary widening of the roadway. This difficulty can be overcome by permitting trees to be planted between the walk and the property line only, leaving the space between the walk and curb for grass and shrubs. This gives what has been termed an "elastic street," as the roadway can be widened from time to time as found necessary.

In determining the width of roadways required for any arterial street or highway, consideration should be given to the kind and number of lines of traffic likely to be served.

The first step in preparation for this report was a reconnaissance of the city of Seattle and its environs reaching to the Snohomish county line on the north, Renton, Orillia and Lake Burien on the south, and on the east to the high ground east of Lake Washington, these being the limits prescribed by the Commission. It seemed clear that in numerous cases arteries on grades not exceeding three per cent could be located, although in a few instances, grades of five per cent, or even seven per cent would be necessary, but that the cost of the arteries would, on the whole, be reasonable. It appeared, also, that the lines of heavy travel would, in the main, always be north and south, east and west travel remaining of comparatively less importance, although with the full development of the territory around Lake Washington, east and west traffic will become more marked. (See Map No. 20.)

The lack of a suitable map showing the topography north of the city, made it necessary to make preliminary surveys for all arteries lying between the present north city limits and the Snohomish county line. For this purpose two parties were placed in the field, each consisting of an Assistant Engineer in charge of a crew of ten to twelve men who surveyed such lines as were required, taking the necessary topography for a width of several hundred feet on either side of each line. From the data thus obtained maps were compiled on a scale of four hundred feet to the inch, showing contours at intervales of ten feet in elevation, and connections with the government land surveys. Upon those maps center lines of the various highways have been located and grades, etc., determined. These can be run out on the ground in the usual way whenever desired.

Within the present city limits accurate information was available for the greater part of the area to be considered, either by the known elevations of improved street intersections, or by contour maps which had been made by the engineering department, for street-and-sewer-extension studies. These maps cover only a part of the unimproved southern section of the city. Some additional information was obtained from a number of private engineers who kindly furnished such data as they had at hand.

South of the present southern city limits, the highway locations have been made from information obtained by personal reconnaissance, in connection with such fragmental topographic maps as could be obtained from private sources, and these locations are therefore only tentative. They will need to be somewhat revised and modified when more detailed information is obtained, but in the main they will be found fairly correct.

It was found that the lines of main arterial highways tended to cross or approach each other near Fourth Avenue and Blanchard Streets, north of the city's principal business area.

Referring to the last report of the United States census for Seattle, we find that the center of population is slightly east of the above mentioned locality. The logical outcome of careful study was a decision that the Civic Center should be placed at Fourth Avenue and Blanchard Street, as outlined under the caption "CIVIC CENTER."

Without going into details of all the arteries found worthy of recom-

mendation, it still seems desirable to show what a number of them will accomplish and the advantages to be derived from their adoption and ultimate construction.

The routes of all existing and proposed arterial highways have been indicated and numbered upon Map No. 2.

A complete technical description of each of these highways is given in Appendix No. 1.

In reading the following pages constant reference should be made to the map and description mentioned.

The widths and grades suggested for Arterial Highways have been carefully considered and are believed to be desirable and satisfactory, but it is obvious that they cannot be unalterably fixed in all cases at this time. They should be carefully considered when plans are prepared for actual construction and such minor changes made as are absolutely necessary, care being taken to preserve the integrity and harmony of the plan outlined in this report.

THE CENTRAL AVENUE

(PROPOSED NAME, CENTRAL AVENUE)

Is destined to be the principal artery through the city, extending from a point slightly to the west of Orillia, along Duwamish Valley to Colorado Avenue in Georgetown, on Fourth Avenue South, Prefontaine Place, Third Avenue and Third Avenue extended to the proposed Civic Center at Fourth Avenue and Blanchard Street; on Dexter Avenue, as widened and extended, from the Civic Center to the south end of Stone Avenue; along Stone Avenue to the south shore of Green Lake; thence skirting the west shore to the north end of Green Lake and along Ashworth Avenue to Eighty-fifth Street, the present limits of the city. From this point it has a general northerly trend, being located in such way as to keep to the contour of the country with easy curves, passing to the east of Haller Lake and generally running midway between Lake Washington and Puget Sound, till it reaches the Snohomish County line, about one-half mile east of Lake Ballinger.

This highway, with its central location and easy grades, will claim an enormous amount of traffic, because the nearby parallel streets are not susceptible of anything like the same development. It is recommended that this street, or avenue, be made one hundred twenty feet wide, excepting such sections as pass through the built-up part of the city's business center and the portion lying between Highways Nos. 33 and 34 which is proposed to be a boulevard not less than one hundred sixty feet wide. (See Appendix No. 1 for further description of the avenue.) This avenue, throughout its entire length, avoids grade crossings of all steam railways and a number of electric lines.

MAGNOLIA WAY

Magnolia Way, entering the Civic Center from the north, in connection with a number of other streets, most of them already existing, will be, by certain extensions and widenings, formed into a continuous artery, beginning at the northwest part of Ballard, crossing the canal by the only highway bridge

to be built below the proposed canal lock site, skirting the east side of Magnolia Bluff, crossing overhead all railway main lines and switch tracks at Interbay, dropping down to the waterfront level at Smith's Cove, and coming into direct touch with water transportation facilities by easy grades, reaching the Civic Center in such way that heavy traffic will naturally pass around the outside of the public-building group without loss of distance. The lighter traffic, or such as has occasion to come to any of the municipal buildings, will have a direct route with grades that nowhere exceed three per cent.

A great part of the land required for widening and extending this street has already been provided for. The part remaining between Elliott Avenue and Denny Way should be acquired at an early date.

HIGHWAYS NOS. 38 AND 22

The district in the vicinity of Fourth Avenue South and Jackson Street, gives promise of soon becoming the most congested area in the city. To relieve this congestion two diagonal streets are proposed, one leading from the intersection of Fourth Avenue and Madison Street southeasterly to the intersection of Twelfth Avenue South and Main Street, shortening the distance now necessary to travel between these two points and giving an easy grade to the higher elevations east of Twelfth Avenue and to the north of Yesler Way. The benefits to be derived from the opening of this diagonal street are many. The proposition should receive early consideration.

The second diagonal proposed, Highway No. 22, is an extension of Prefontaine Place southeast to the intersection of Ninth Avenue South and Dearborn Street. This will provide a grade not exceeding two per cent at any point and require but slight adjustment of existing grades. It will furnish an outlet for street traffic from Rainier Valley, Day Street, etc., to and from points both east and west of Third Avenue, north of Yesler Way. This diagonal, with its easy grades, would soon become a good business locality and would also tend to break up the possible formation of an Oriental district in that vicinity.

HIGHWAY NO. 24

From the intersection of Twelfth Avenue South and Main Street, this highway has been laid out west of Rainier Avenue which it parallels for a distance of about one and one-half miles. It then gradually bears eastward and reaches the high ground nearly bisecting the area lying between Rainier Avenue and Beacon Avenue south to Othello Street; it then crosses to the east of Rainier Avenue at the intersection of Wabash Avenue and leads to the lake shore in the vicinity of Rainier Beach, whence it continues along the shore of Lake Washington, joining with and absorbing the present state-aid road connecting Seattle and Renton. This highway will accommodate the traffic from the districts lying between the summit of Beacon Hill and Rainier Avenue, as far south as Rainier Beach, and thus relieve the property owners on Rainier Avenue of the expense of widening that street for the relief of any future congestion of traffic, and will provide good grades and a direct route much nearer the property to be served than would otherwise be possible.

HIGHWAYS NOS. 12 AND 33 (COMBINED)

A new artery is proposed, leading off Westlake Avenue at Mercer Street and following the general course of Southlake Avenue, Eastlake Avenue and Howard Avenue to the Lake Union Crossing at Latona, where a double-deck bridge should be constructed in order to permit an upper and lower roadway. The upper roadway will begin to ascend from the intersection of Eastlake Avenue and Martin Street, crossing above Northlake Avenue, Pacific Place and North Fortieth Street. An incline should be built parallel with the viaduct connecting the upper roadway of North Fortieth Street with the upper roadway of the viaduct. (See Map No. 12.)

Inclines leading to the lower roadway of the bridge should also be built on the north side of Northlake Avenue substantially parallel with and south of the railways. Continuing to the northeast, this highway forms a connection with existing streets at Eleventh Avenue Northeast and East Forty-second Street; then skirting the north side of Ravenna Park it forms a connection with Highway No. 33 that has been located from field surveys, and follows the general location of the present County Road leading to Bothell. Slight changes will be necessary to reduce the grade from five to three per cent. This highway will be second in importance only to "CENTRAL AVENUE" so far as it affects the northeast portions of the city, and will, undoubtedly, receive a great traffic when this section of the city shall have been developed, since the topography is such as to preclude the possibility of other parallel highways on favorable grades. That part of this artery north of Eighty-fifth Street is proposed to be a boulevard. (See Boulevards.)

SPOKANE STREET ROUTE

The WEST SEATTLE PENINSULA will receive the best service by way of Spokane Street, leaving the business section of the city by First Avenue South. Considerable travel to and from the business section will occupy Whatcom Avenue and First Avenue South, but heavy travel originating farther east will reach Spokane Street by the north and south avenues as far east as Seattle Boulevard and Ninth Avenue South. That part of Spokane Street west of Montana Avenue will be elevated, crossing all railway tracks overhead permitting safe and uninterrupted service to the West Side and to Harbor Island piers and docks, it being the intention that all tracks in those localities shall be at wharf level or at such street level as may be determined upon to provide for drainage only. The incline to the upper elevation will begin at Montana Avenue and reach the height of the upper roadway about seven hundred twenty feet west of Montana Avenue, and continue elevated across Pigeon Point to high ground on the west side of the bay, near the intersection of Arizona Avenue. Inclines should be built northwest and southeast, on the new street which is to be opened parallel with and east of Klickitat Avenue and to the southeast of Iowa Avenue (see Map No. 6); also east and west of the north side of Spokane Street at Twenty-third Avenue Southwest, and north and south on Twenty-sixth Avenue Southwest. All inclines should be so constructed as to obtain the necessary clearance over railway lines.

From the intersection of Spokane Street and Arizona Avenue, a diagonal contour street leads northwest to the summit of West Seattle hill, landing at California Avenue and West Wait Street, continuing westerly to Alki Point,

the maximum grade being seven per cent. This will give a shorter route to the city for the greater part of West Seattle than can be had via Alki Avenue, which will carry all of the low level traffic along the waterfront as far south as Alki Point.

HIGHWAY NO. 41

This diagonal street leads southwest from Arizona Avenue and Spokane Street to the West Seattle summit at California Avenue and West Morgan Street and continues to Fauntleroy Park; all with a grade not necessarily exceeding five per cent. This line will furnish a short cut from Puget Sound, over the summit and into the city, saving much distance over the shore line route. As the grades on the intersecting north and south streets are not excessive, nearly all of the heavy hauling will be done by traveling north or south to meet this highway and continuing thereon, to reach points either east or west of California Avenue.

HIGHWAYS NOS. 39 AND 40 (COMBINED)

This route includes and is an extension of Seattle Boulevard, crossing Duwamish Waterway in the vicinity of Edmunds Street and cutting through a sharp ridge by a tunnel about one thousand feet long to the intersection of West Edmunds Street and Twentieth Avenue Southwest. This route will be shorter than that via Spokane Street, for all that section of West Seattle lying south of West Hudson Street, except a small area along the ridge near California Avenue, which will, owing to local grades, take Spokane Street. The maximum grade on this route for about five thousand linear feet will be five per cent, the remainder not exceeding three per cent. The section of Seattle Boulevard included in this route will cross over or under all railways, according to local conditions, being elevated across the Duwamish Waterway and marginal streets, thus avoiding dangers and delays caused by railway operations.

The double section of this highway, from West Edmunds Street to near West Cloverdale Street, is required because of a high, straight ridge (with tunnel mentioned) lying between the two, and also because, the property not having been platted, these highways can serve the adjacent property and can be incorporated into a plat without waste of territory. In the vicinity of Cloverdale Street, Highway No. 40 branches, one branch leading westerly to Fauntleroy Park. This branch will naturally invite traffic by way of the Seattle Boulevard route into the city, the grades being generally three to five per cent, about one thousand three hundred feet, however, being on a grade of nearly seven per cent. The other branch of Highway No. 40, before mentioned, continues due south from West Cloverdale Street for a distance of about four thousand feet and then turns slightly west of south, following the small stream locally known as Salmon Creek, to the beach near the west side of Section 12. The grades here obtained need not exceed five per cent and will give access to a considerable area both east and west of this division of the artery.

MARGINAL WAYS

In order to furnish transportation facilities which will accommodate but not interfere with future development of the factory site property along Du-

wamish Waterway, marginal ways or streets are located on either side of the waterway of ample width to meet all future needs, and planned far enough away from the channel to enable the plants to be placed and developed with considerable freedom, because it will be impossible to make a plan showing in detail just how the waterfront and factory site property should be utilized. These marginal ways extend from Spokane Street on the north to the southerly limits of the territory covered by this report, the sections south of Black River being arteries perhaps rather than marginal ways. Routes across the waterways connecting the east and west marginal ways are provided for at the following points, viz: Spokane Street, Seattle Boulevard, West Front Street, Dunlap Canyon, Riverton, Black River and Renton Junction.

HIGHWAY NO. 6

First Avenue South, with its southerly extension, forms an important artery at this time and will increase in importance. It is likely to become one of the first southern arteries to fully develop capacity for receiving the heavy traffic soon to seek it. Continuing down First Avenue South to Oxbow, the street is now open and inviting travel from the immediate territory. The lack, however, of any suitable outlet to the south retards its development. The location given is only approximate, detail surveys not being available for the entire route, but sufficient data have been obtained to clearly indicate that the main arterial highway should not attempt to follow the section line directly south, but should deflect to the east and thus attain a grade of three per cent desirable as the maximum for main arteries. This Highway gives the best service to the territory lying immediately adjacent to the route for a distance back of perhaps three-quarters of a mile on each side, and is the nearest and best route for all that region lying south of Highway No. 55, including Lake Burien and Three Tree Point territory, and it should be possible to serve almost the entire vicinity with grades not exceeding five per cent on local streets.

HIGHWAY NO. 48

This thoroughfare includes parts of Ninth Avenue South and Seattle Boulevard, ascending southward to an elevation of approximately fifty feet above the Duwamish Valley, continuing along the brow of the hill over a portion of Swift Avenue at Juneau Street, thence along and maintaining a nearly uniform elevation on the hillside to the west end of Dunlap Canyon where it connects with the Dunlap Canyon artery. From this point it continues southerly along the hillside to Black River, where it connects with the highway leading into Renton. Several overhead crossings extend from this highway over the railway tracks to the west in approximate vicinity of the following streets, viz: Lucille Street, Othello Street, Barton Street, Dunlap Canyon, Juniper Street and Black River Junction. On account of these crossings and for the further reason that there is but little property to be served on the west side of this artery and east of the railroads, it is generally at an elevation considerably above the valley, thus making it slightly easier of access from high ground to the eastward. Several connections have been made to the top of the hill on which some five per cent grades will be required.

HIGHWAY NO. 19

This diagonal leads directly from Dexter Avenue near Roy Street, southeasterly to Denny Way at Fairview Avenue; thence along Denny Way to Eastlake Avenue, beginning to ascend at about Pontius Avenue, passing overhead at Stewart Street and Eastlake Avenue, reaching high ground on Denny Way between Eastlake Avenue and Melrose Avenue. By this route the distance from Thirty-first Avenue South and Judkins Street, to the Civic Center, or Pike Street and Fourth Avenue, will be reduced one-half mile, and the grade will not exceed five per cent, except for a short distance from Denny Way to Pike Street, where the grade will not exceed seven per cent.

HIGHWAYS NOS. 22 AND 53 (COMBINED)

Dearborn Street, when completed according to plans now in force, will provide a grade of three per cent to Rainier Valley from the business center. A branch route along Day Street can be had on the same grade to a point between Thirty-fifth and Thirty-sixth Avenues South, cutting through Rainier Heights ridge by a tunnel 1,770 feet long, passing underneath Washington Boulevard on Thirty-fourth Avenue South, and giving access to a considerable area west of Yakima Avenue.

This will provide the most available easy grade route from the business center to the lake shore and should receive attention when the demand is sufficient to require such route.

This artery will be the central route between Elliott Bay and Lake Washington. To obtain the greatest benefit therefrom ferries should be established at the foot of Day Street for both passenger and team service, because at no other point between Genessee Street and Union Bay will it be practicable, at reasonable cost, to obtain access from the heart of the city to the lake front on a three per cent grade.

HIGHWAY NO. 38

This highway reaches the business section of the city at Fourth Avenue and Madison Street. The western part of the line has been previously described. (See Highways Nos. 38 and 22). From the intersection of Yesler Way and Broadway, this route, in general, parallels Madison Street, although not confined to a straight line, and provides a means of access from the business section of the city to Lake Washington, near Madison Park, on a grade not exceeding five per cent, as against existing fourteen per cent grades on Madison Street. It will serve an extensive area south of Madison Street, and while the amount of land to be acquired will be considerable, the street is a necessity.

BOTHELL-KIRKLAND-RENTON ROUTE

On the east side of Lake Washington a tentative location has been made for Highway No. 62 from Bothell southward, crossing the Northern Pacific Railway main line overhead, at the head of Lake Washington, passing through the south half of Section 17, a little east of the present county road, and through the saddle northeast of Juanita Bay, crossing over the Belt line of

the Northern Pacific Railway, in the southwest quarter of Section 28, Township 26 N. R. 5 E., then swinging into the abandoned right-of-way of the old Belt-Line Railway, passing to the east of Kirkland, and bearing to the eastward away from the railroad, then back and across the railway near the northwest corner of Section 28, Township 25 N. R. 5 E., passing through Bellevue along the east side of Mercer Slough on high ground, through the town of Factoria and above Newport Landing, over Coal Creek on a viaduct of considerable height, and continuing on a descending grade through Kennydale into Renton. An effort was made to secure location for this artery, giving the most direct line possible for through traffic, without encountering heavy grades, yet permitting frequent approach toward the lake. It will be feasible to construct this artery on grades not exceeding three per cent. It will give access to the high ground to the east as far as a point about four miles south of Kirkland, where it will connect with a highway which lies beyond the region covered by this report.

It is proposed that this artery be made a boulevard, excepting that portion lying within the business section of the town of Renton. (See Boulevards.)

Routes connecting this highway and the lake front are provided by a number of branch lines; the first, Highway No. 63, diverges to the west, leaving Highway No. 62 at a point about one-half mile north of Juanita, thence follows the low ground to Juanita Bay and returns nearly east from Juanita Bay to the main highway near the center of Section 33. Another branch leads southwest from near the west quarter corner of Section 4, near Kirkland, to the southwest corner of Section 5, Township 25, N. R. 5 E. A water level line along the lake front, connecting these several branches, supplies a means of reaching the upper line from points along the waterfront. A short distance south of Northup landing, and between Yarrow and Bellevue several lines divide the territory and form junctions with the main highway on the north, near the north line of Section 20, and on the south, just west of Bellevue. On all these main and branch lines on the east side of Lake Washington, grades may be obtained not exceeding three per cent. Several will demand much less.

MERCER ISLAND

One main highway has been laid out across Mercer Island, beginning in Section 7, opposite the narrow channel; thence ascending northwest in Section 12, thence nearly south to a low gap in Section 12 and along the hillside, descending to a point opposite the narrowest part of the channel, between Mercer Island and Bailey Peninsula. Detail maps could not be obtained from which to make this location, but a line in the approximate location shown can be had and should be secured.

A bridge will some time be warranted across the east channel, but the depth of the water and the length of the span necessary to bridge the west channel, are too great to permit the construction of a bridge at that point, at any reasonable cost, and the best solution would be a ferry which could very easily be operated, as the distance is only about 3,000 feet. There should be a street around the entire island. No attempt has been made to show this. Its location should be governed by the topography of the region, the prime

requisites being good alignment and grades and an elevation not unnecessarily high above the water.

TUNNELS FOR STREET TRAFFIC

The topography of Seattle, especially near the business center, is such as to make it difficult to provide routes of suitable grades for heavy traffic, without developing extra distance in order to overcome the summits of ridges. The future will demand better access than can be had by surface streets and the following routes are suggested as being suitable locations for tunnels in order that future traffic requirements may be met.

Tunnels which are to provide both for teams and street cars should be at least forty feet wide, the car tracks preferably being on one side, separated from the team way by a dwarf wall, the rapid transit line when built to be in a subway underneath the floor.

If street cars are not to be allowed, a width of thirty feet for teamway and sidewalk will be sufficient.

DAY STREET TUNNEL: Highways Nos. 22 and 53, including Dearborn-Rainier Avenue-Day Street line, from Fifth Avenue South to Lake Washington, presents by far the best possible line from the business section of the city to the lake front, for heavy traffic, the grade at no point exceeding three per cent and the distance only 1,600 feet more than a direct line.

This route requires a tunnel 1,770 feet long on Day Street and Day Street produced east, the west portal being midway between Twenty-ninth Avenue South and Yakima Avenue, and the east portal being just east of and under Thirty-fifth Avenue South, where it lands in a large plaza with approaches north and south to the lake level for teams, and to the east for foot passengers.

UNION AND WEST SPRING STREET: The ever-increasing traffic around the north end of the First Hill over Pike and Pine Streets clearly points to a time when travel will be seriously congested, and this, with no opportunity for opening up additional streets with as favorable grades, justifies the belief that a tunnel route for teams will become an economic necessity in the comparatively near future.

The most favorable route for such tunnel is from the intersection of Ninth Avenue and Union Street to the intersection of East Spring Street and Eleventh Avenue. This line will be practically a projection west of East Spring Street, and will give a tunnel 2,700 feet long with a grade of four and one-tenth per cent.

WEST SEATTLE TUNNEL: A tunnel is proposed on Highway No. 39 leading southwest from West Edmunds Street produced west. About half the length of this proposed tunnel will be east of Twenty-third Avenue Southwest, the other half to the westward thereof. The approximate length is 1,000 feet on a grade of three per cent.

This tunnel is required to enable a traffic street to be constructed with grades not exceeding five per cent, leading east of the Longfellow Creek District in West Seattle via Seattle Boulevard, into the city, making a route nearly 4,000 feet shorter than any possible route farther north. It will serve a very large area south of West Dawson Street.

INTERLAKEN TUNNEL: A line has been selected leading from the angle point in Eastlake Avenue passing nearly through the intersection of Frank

lin Avenue and East Galer Street, to the intersection of Boyer Avenue and East Lynn Street. This route will require a tunnel 4,300 feet long on a maximum grade of only five-tenths of one per cent, leading to a summit near the middle, passing about 300 feet underneath the summit of the North Broadway Hill and giving access from the Union Bay district to the business section, and nearly one mile less distance than can be otherwise had.

The development of the section north of Madison Street around Lake Union, as well as the territory north of the canal, will make this route of great value and a way should be kept open for the construction thereof.

SPOKANE STREET TUNNEL: Access from Rainier Avenue and Lake Washington to the tidelands and West Seattle can only be had by either a long detour or by surmounting hills rising to an elevation of about 300 feet above datum. The distance necessary to travel from Spokane Street at Lake Washington to Spokane Street and Ninth Avenue South, on streets having grades not exceeding three per cent, would be about four and three-quarters miles via proposed Day Street tunnel, Rainier Avenue and Dearborn Street, while by this tunnel route the distance would be less than two miles. Future development of the Lake Washington waterfront will make necessary a shorter route by easy grades, which may be had by this line, beginning on the east side of Tenth Avenue South, coming to daylight about 500 feet west of Rainier Avenue, entering tunnel again slightly east of Thirty sixth Avenue South and landing at Lake Washington. As will be noted, this route consists of two tunnels, the westerly being 6,000 feet long and the easterly one about 1,600 feet long.

It will naturally be many years before such a route will become an economic necessity, but in process of time will surely come before the people.

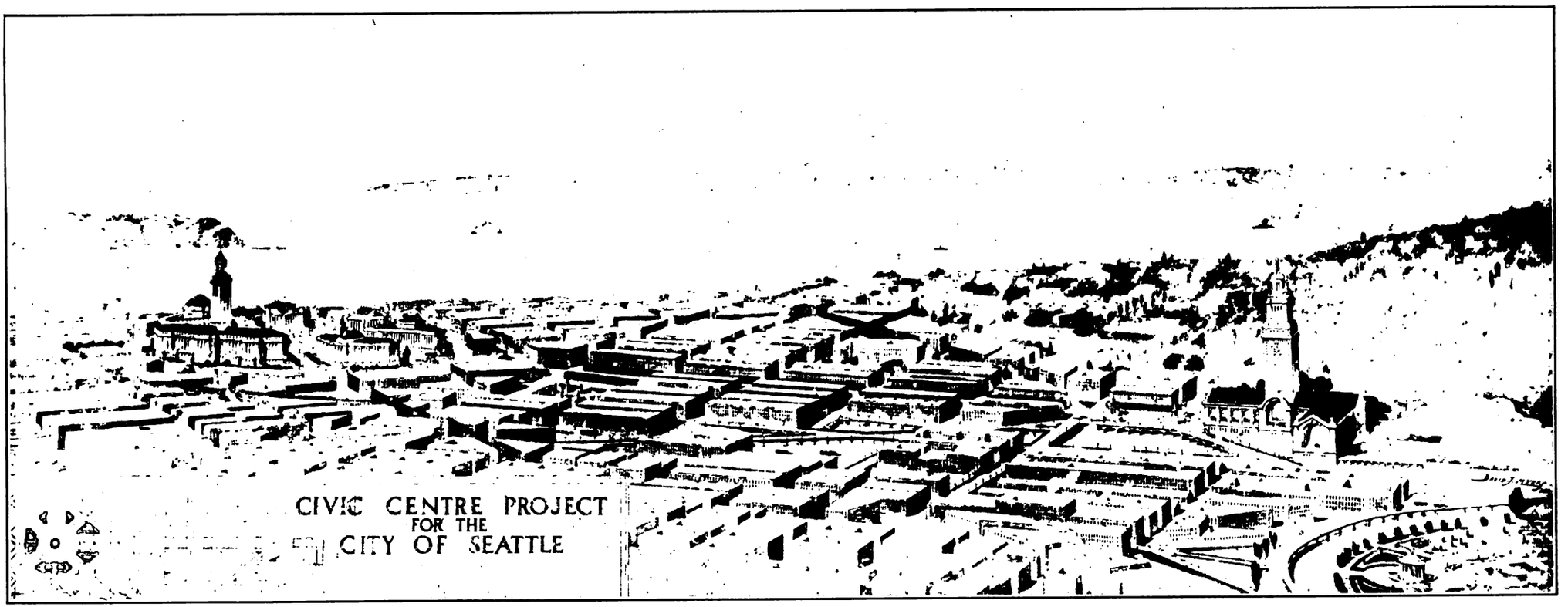
BLANCHARD STREET TUNNEL: A feasable route for heavy traffic can be had from the waterfront to the intersection of Westlake Avenue and Virginia Street, by a tunnel 2,380 feet long under the center line of Blanchard Street. The east portal of the tunnel would be at the east margin of the new street which has been laid out conecting the intersection of Fourth Avenue and Olive Street with the intersection of Ninth Avenue North and Denny Way. The west portal would be just west of the diagonal portion of Elliott Avenue, where it intersects Blanchard Street.

This tunnel would cross over the Great Northern Railway tracks, and under the intersection of Elliott Place and Blanchard Street. It would be reached by an incline from Railroad Avenue along the west side of the vacated portion of Elliott Avenue, south of Blanchard Street, landing about the foot of Pine Street.

This route can be had on a grade not exceeding two per cent. It is suggested because it is the best location for such a tunnel anywhere along the north central waterfront.

TRAFFIC BOULEVARD AROUND LAKE WASHINGTON: The recommendations and suggestions touching highways and boulevards mentioned in this report cover what will practically amount to a traffic boulevard all around Lake Washington, although not always immediately along the shore, there being certain headlands and bays which render a shore location difficult in various localities. The proposed route takes advantage of existing county roads or streets to a considerable extent. The width of this boulevard, as indicated

Plan of Civic Center Project

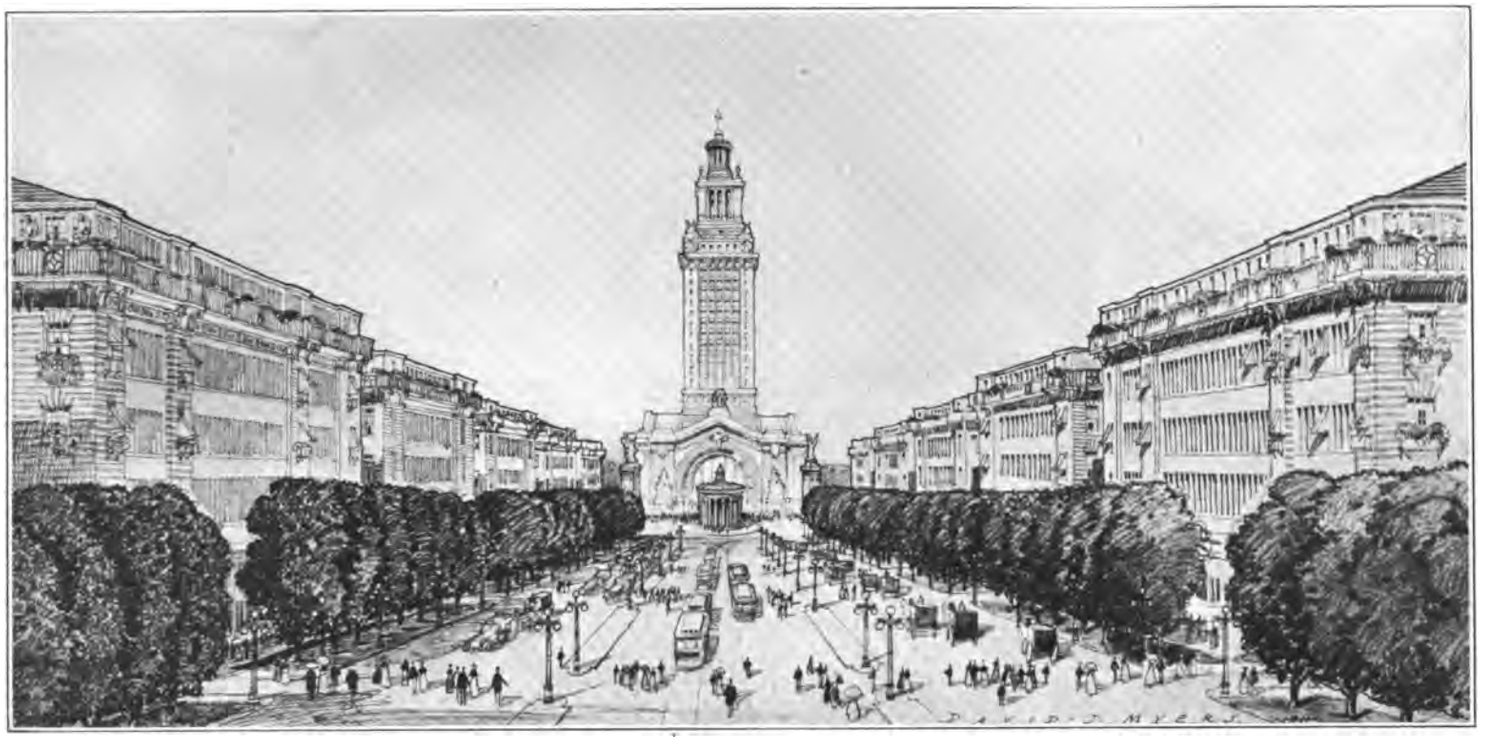


View of Civic Center from Neighboring Hill, looking West

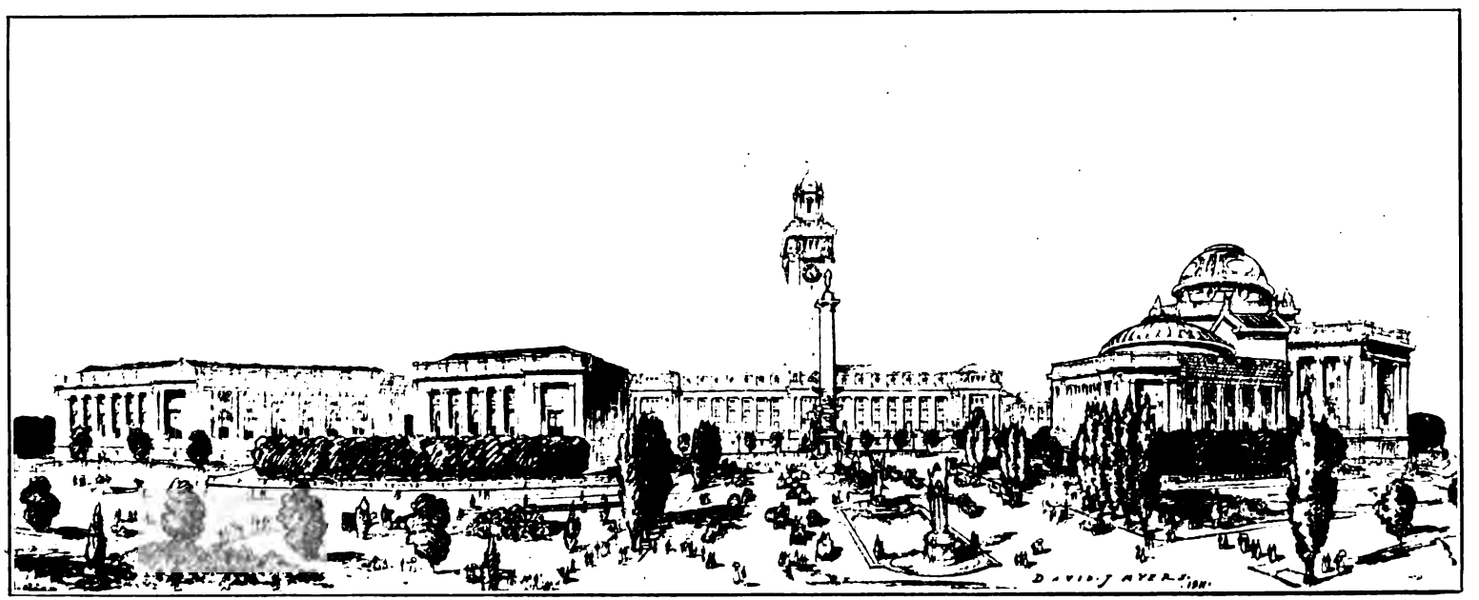
North Station, Paris

Railway Station Plaza, Basle, Switzerland

Central Station, Antwerp



Central Avenue, looking North to Central Station



View into Civic Center Olympic Mall

on the maps and in the descriptions, varies from 120 feet to 160 feet according to location, having the former width in sections already more or less occupied by business or homes.

It has been suggested that this boulevard should have a width along the shore of not less than 250 feet, and that the state government be requested to transfer to the city the right of way therefor wherever it crosses the lands of the state, which will be exposed when the water is lowered about 8 feet, as it will be by the finished Lake Washington Canal.

The highways and boulevards of the region east of Lake Washington, as indicated on the maps, are only approximate to their ultimate locations. Owing to the lack of definite data it has been necessary to depend on personal reconnaissance, a method which gives only tentative results, although, with respect to the case in hand, much care has been observed and the locations shown fairly indicate the routes which must be followed.

A traffic boulevard mostly near water level around the entire lake is one of great importance to the future city, and merits study in much detail. In view of the lack of suitable topographic maps it is hereby suggested that at early date the city and county authorities have such surveys and maps made as will provide accurate data upon which to base a careful location of the boulevard referred to. If these topographic maps cover the territory between the lake and the high ground or ridge to the eastward thereof, they will be invaluable to those who desire to plat their property and also to the future city in making its locations of water supply, sewerage, etc. Upon topographic maps property owners can have plats made of their property which will provide for streets that will follow the contours, giving results which will be largely park-like in their effects and require far less grading, etc.

The engineers who do this work should be instructed to have the location of the boulevard in view in order that they may fully develop the physical conditions which may constitute obstacles thereto, such as headlands, bays, channels, swamps or sloughs, and as well, improved properties which may be benefited or damaged thereby.

Such surveys and maps must be made sooner or later and in view of the importance of the proposed traffic boulevard it is desirable that they should be undertaken at an early date.

The Civic Center

THE reasons for the establishment of a CIVIC CENTER are various, and into the determination of its location, size and character, especially when it is to serve the needs of a city experiencing remarkable growth, with surest promise of its continuance, enter many grave questions.

The foremost, probably, is the question of economy. In a city, however, where the extension of the business area is bound, in surprisingly few years, to spread beyond the limits within which a CIVIC CENTER would be deemed desirable, it is the part of wisdom, while they are yet available at prices far below those obtaining within the range of business activity, to secure advantageous sites for such public buildings as are likely to be needed for many years to come.

To defer the purchase of sites until the need of each successive building shall be pressing is inevitably to incur an unnecessary expense, not only in the increased cost of locations then deemed suitable, but in the cost and damages pertaining to removal of buildings still serviceable as business structures. It is unnecessary that sites thus secured be cleared at once of the buildings that may occupy them or that those now clear shall so remain until required for their eventual uses. As is continually done with private lands, temporary improvements on short-term leases may be made to more than cover the interest on their cost while awaiting the time of final improvement.

The establishment of a CIVIC CENTER effects economy in the conduct of business in and between the several city departments, their proximity making easy their intercommunication. Likewise, duplication of records and documents is obviated. The number of employes and the amount of general service are also reduced, and the supervision of work in interdependent departments expedited.

For many people almost daily obliged to visit a number of different departments, centralization effects a saving in time and money which, where officers are distributed in various parts of the city, is spent in transportation. Where city buildings are located in various parts of the city the lack of familiarity with their respective locations on the part of those who seldom have occasion to visit them or who live out of town makes their grouping a matter of especial convenience.

Not only is it desirable, for the reasons mentioned, to have all branches of the city government houses in the same neighborhood, but also in order that urban transportation may be so arranged as to make them, if possible, equally accessible from all sections of the city. An unrelated distribution throughout the city makes this practically impossible of attainment.

A CIVIC CENTER should embrace an area sufficient to accommodate, on great occasions, large gatherings of citizens. It should afford ample space for the accommodation of pageants and for the formal reception of delegations from other cities or foreign countries. It should also furnish a proper setting for important buildings of a public or semi-public character, detaching them

from structures of inferior nature and giving them DISTANCE from which they may effectively be seen, heightening the effect of separate buildings by the vicinity of others of similar distinction. The impressiveness of a group of imposing buildings is greater by far than the sum of the effects of each standing alone amid meaner structures. As has been said by a prominent speaker at a National gathering of architects:

> "Isolated buildings, of whatever individual merit, are insignificant in comparison to massed constructions, even if these latter be mediocre in quality."

It is right and proper that the city should benefit by this added effectiveness. To expend large sums in the construction of noble architecture, only to have it almost wholly effaced in a crowded business street, is the height of folly and extravagance. It is even more, because indicative of a lack of discrimination between the ability to pay for and the instinct to appreciate and enjoy the worthier products of civic life.

Thought, therefore, should be given to the morrow of greatness, and enthusiastic preparation should be made for the elevation of those fitting insignia of metropolitan rank among cities, noble and imposing houses of national and municipal government, including its Federal buildings, its court house and city hall, and those temples of social service, the library, art museum and auditorium.

What was adequate for a town of pioneer beginnings, or what may be so for a city just glimpsing its prime, will not meet the standards and requirements of the mature commonwealth. An authority on modern civic art, in speaking of the buildings which go to constitute the elements of an administrative center, recently said:

> "No other structures are so appropriately entitled to the best position the town can afford as are those that stand officially for the town. And, this being true, of public buildings, they are gregarious; they belong in about the same location, theoretically without regard to—because above—the temporary matter of land values and the claims of individual real estate interests. Not only do these buildings belong together, but each gains by the proximity of the others. There is not only a utilitarian gain in the concentration of the public business, but there is a civil gain in the added dignity and importance which these buildings seem to possess. Collectively, they appear to make the city more prideworthy; they make the municipality—in this representation of the mightiness of its total business—seem a more majestic thing and better worth living and working for—as of larges possibilities for good—than could these same buildings when scattered about the town in a wilderness of business structures."

There are yet considerations which have not been touched upon, which should hasten the creation of such a center; considerations that are higher than mere convenience and pecuniary benefit, because they reach the minds and hearts of the people. Environment in youth has an enormous influence on the personal and civic education of future citizens.

It has well been said that:

> "Mean surroundings produce mean men, slovenly women and lawless children, while elevating scenes inspire to higher aims, better speech and manners, and a wholesome respect for the law. Given a commodious, attractive Center of Civic Interest, easily and quickly reached, and, with profit to the city, her people will seek it at every opportunity, there to gain some notion of the significance and function of the municipal government. And thus the impulse of the popular imagination, stimulated to desire a splendid expression of its Civic Ideals, is fortified by every consideration of municipal, commercial and social welfare."

With due respect and proper regard for all these several elements, and after the most careful and thorough study of present and future needs of the city and the possibilities due to, and dependent upon, its unusual topography, the location, size and character of a Civic Center for the City of Seattle has been determined. The considerations, in detail, upon which this determination rests, are set forth in the following pages and by means of accompanying maps and illustrations.

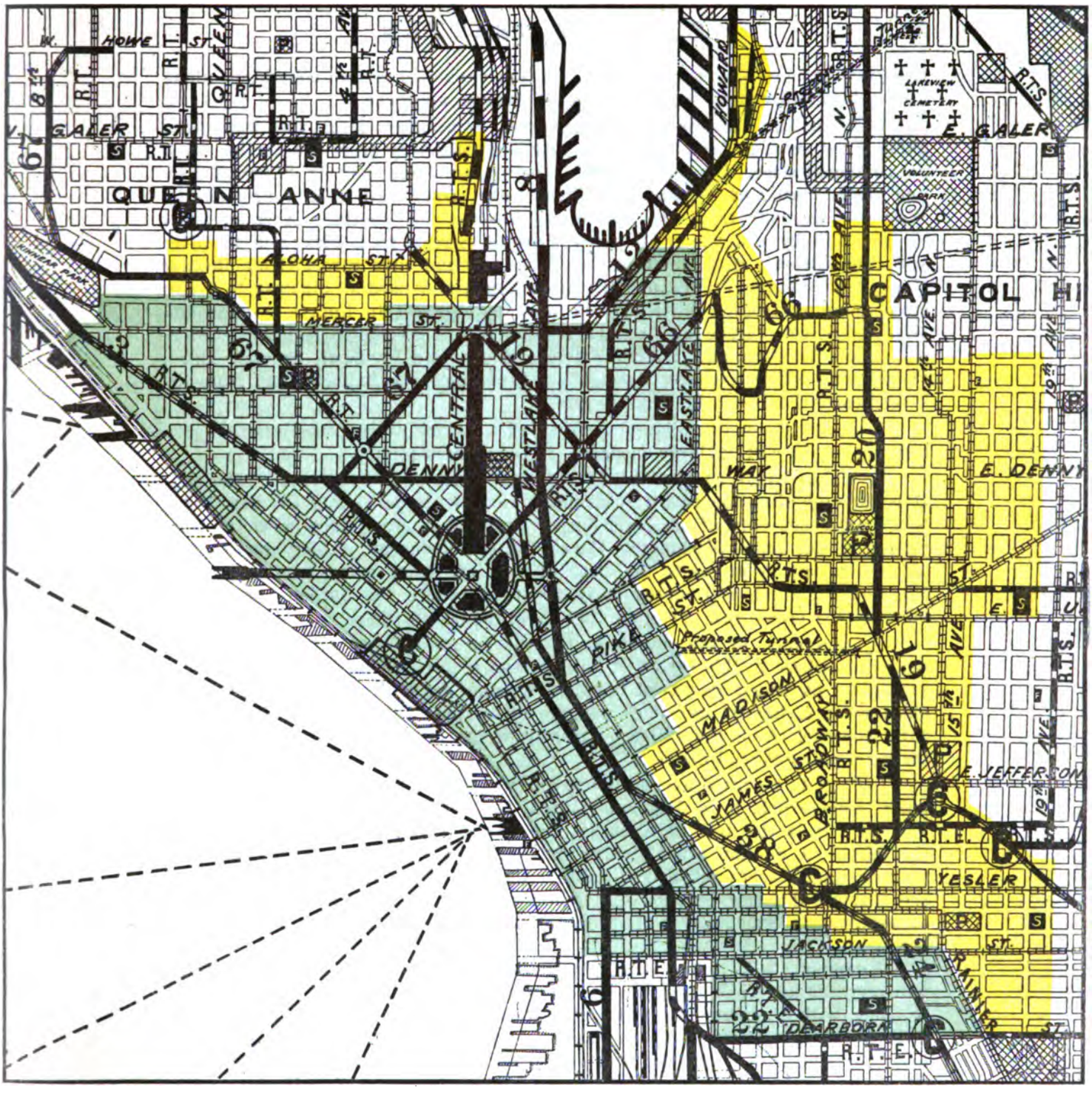
By the terms of the charter amendment under which the Commission acts, and in accordance with your instructions, to plan to meet the conditions of a city of a million people, it is obvious that the location of a CIVIC CENTER should be at a point as near the probable center of population, when that population shall have reached a million, as the approximate center of the probable future business area will permit.

Investigation of the direction and rate of movement would seem to indicate that the center of population of a million will fall in the immediate neighborhood of the southern end of Lake Union. This point, however, lies at the extreme northern limits of what, doubtless, must eventually become the compact, high-class business district of the town; and, consequently, while of a fair degree of accessibility from outlying sections of the city, could not be made to serve with equal impartiality all sections of this future business area, even though there were no other serious objections to its appropriation for this purpose, such as its comparatively low elevation and its suitability for a warehouse and wholesale center.

The extent of this area, which is of a roughly triangular shape, is, in a general way, quite clearly defined by the surrounding hills and waterfront, including Queen Anne Hill on the north, and the more or less sharp slopes of First Hill, from Lake Union to the Tide Flats on the south and Elliott Bay on the West. (See Plate No. 1.)

The approximate center of this triangular area, situated at the intersection of Fourth Avenue, Blanchard Street and "Central Avenue," (Dexter Avenue) while some distance south of the probable center of future population, is found not only to be practically free from reasonable objection, but in addition, possesses some advantages which directly recommend it for the location of the Civic Center.

It is found to lie at a natural conflux of arteries from the greatest number of widely scattered sections of the city. At no other discoverable point can direct approach be had from so many different sections. To any other point approach would have to be made over the same arteries for varying distances



MUNICIPAL PLANS COMMISSION OF THE CITY OF SEATTLE

MAP ILLUSTRATING BUSINESS AND APARTMENT HOUSE AREAS

SEPTEMBER 1911 — VIRGIL G. BOGUE, ENGINEER

BUSINESS AREA . . . . . .

APARTMENT HOUSE AREA . . .

PLATE No. 1

from two or more districts. Such a location assists to relieve congestion along lines which otherwise would be those of common approach.

It offers direct access by possible street approaches from the waterfront along First Avenue from the south, and Magnolia Way from the north. By a new diagonal street it is reached from East Queen Anne, and by "Central Avenue" from East Queen Anne and Green Lake; from Ballard and Fremont by Westlake Avenue; from the University District by Eastlake Avenue; from Capitol Hill by a down grade along Prospect Street; from First Hill by Olive and Pine Streets; from Madrona, by Broadway and Pike Street; from Rainier Valley and Renton, by Rainier Boulevard, or a new parallel highway to a new street running from Twelfth Avenue and Main Street to Fourth Avenue and Madison Street, thence by Fourth Avenue; from Georgetown and the Duwamish valley, by First and Fourth Avenues South, and by First, Second, Third, Fourth and Fifth Avenues, through the lower business districts; and from the West Seattle Peninsula by First Avenue.

It lies at the natural junction point of a future rapid transit system conforming, as it will in large measure, to the arterial plan.

It makes equal recognition of both the water and land areas of the city. It is the only situation equally convenient to both the lakes and the bay. This is a matter not only of aesthetic but of practical interest since, with the completion of the Lake Washington Canal, the establishment of ferry service will afford comfortable access to the heart of the city from many points on Lake Washington, which will consequently assist to relieve the burden borne, even now, by the cross-town car lines that serve the lake ferries.

By reference to the proposals for the future railway arrangements presented elsewhere in this report, it will be seen that provision has been made for a terminal passenger station at "Central Avenue" and Roy Street. This provides what is highly desirable: namely, an ample, direct and inviting boulevard approach from the railway gateway of the city to the Civic Center and the hotel and financial districts.

In fact, this parked avenue is but an extension of the Center to the station plaza, from which, by a diagonal viaduct, the Lake Union Waterfront may be reached. It is the arm that reaches northward from the Center to embrace the lakes. A similar broad avenue extending westward from the Center is the arm that reaches outward to embrace the bay, while Blanchard Street marks the shortest distance between the Center and the bay. There should be built an ornamental esplanade on the slope of Blanchard Street, overlooking the harbor.

"Olympic Mall," whose axis pierces the loftiest peak of the Olympic Range, will serve as approach from the sea, and at the short end will some time be embellished with a monumental water gate, where our own notables and representatives of foreign nations may be received in honorable state. "Central Avenue" and "Olympic Mall," together with diagonals, one of which is the present Broad Street, are essential parts of the scheme for the completed Civic Center.

By a happy circumstance, the location lies upon a natural eminence, so that by a slight change of grade the land will fall away gradually to the north, south and west, while to the east occurs a more perceptible drop, of approximately fifty feet, to a proposed market place on Westlake Avenue. From the market place, along the line of Blanchard Street, it is proposed to construct,

when conditions shall require, a traffic subway, or tunnel, to the waterfront; the grade in the tunnel being two per cent, maximum; while northward, Westlake Avenue will pass under viaducts at Republican and Mercer Streets; also a new diagonal street is provided for from Boren Avenue and John Street to the station plaza. It is also proposed to supplement Westlake Avenue by a new thoroughfare extending from Ninth Avenue and Denny Way to Fourth Avenue and Stewart Street.

Not less important is the arrangement by which the tracks, passing under a wing of the station, lead to the southern part of the city and to the waterfront, through tunnels whose portals are so situated as to avoid grade crossings, and to remove the frequently passing trains from view.

With respect to the question of cost, it so happens that, due to the recent regrading of a large part of the area embraced in the plan for the Civic Center, it is at the present time without buildings requiring purchase under condemnation proceedings. This eliminates a requirement hardly to be elsewhere escaped. Furthermore, the location is still at the verge of the rapidly expanding business area and is, consequently, obtainable at a comparatively low figure, probably not to exceed, at present valuation, $3,500,000, including the new streets, avenues and plazas immediately connected therewith. By the sale of the property of the city and county in the southern part of the city, if such sale were found advisable, this figure would, doubtless, be reduced nearly one-third.

Another phase of the question arises in connection with the conversion of so large a space to other than definite business uses. Fortunately, the setting apart of the necessary amount of land at the location proposed, now or in the near future, will not be a hindrance to the expansion of business, since it lies where two streams of business extension and traffic divide naturally to reach, respectively, the district overlooking the bay on the west and Lake Union basin on the east. This is especially so since the nature of the traffic and business following these respective channels will, in all probability, be of different character, that along the Sound tending to office and retail activities, and that toward Lake Union to heavy merchandising.

At no other point in the probable future business area can the amount of land necessary to provide for a center of suitable amplitude on practical grades be obtained without interference with the natural flow of public and private activities.

By comparison with centers planned for many cities of the size of Seattle, it is found that the area here allotted is of modest dimensions. The open area at Cleveland, as well as at St. Louis, is as wide as the proposed plaza and three or four times its length, and, in the case of those towns, it is intended to construct their public buildings outside of, but facing upon, such area. Although this selection is deemed ample for the needs of the city, it may be interesting, by way of comparison, to note that were the construction of a center attempted, of equal amplitude, in connection with the city's property at Third Avenue and Yesler Way, it would extend from Yesler Way to Columbia Street and from First to Fourth Avenues, including surrounding streets.

Yet, to set aside a lesser area would simply be to defeat the purpose of such reservation, because it would not furnish space for the same neighborhood in the years to come. But the city's occupation of such an area, or even a small fraction of it, near Third Avenue and Yesler Way, is prohibitive, both on ac-

count of the tremendous cost of its purchase and, even more, for the important reason that it lies at an angle of the triangle of the business area through whose narrow limits must continue to pass an ever-increasing traffic, and where commercial property will much better serve the ultimate needs of the city.

The interruption of the flow of business just here, by the interposition of an adequate Civic Center, would be an unwise enterprise. Space will be so necessary for commercial purposes that it would seem at the present time unwarranted to reserve even the blocks now owned by the county and city at Yesler Way and Third Avenue, although the very fact of the congestion at this point, increasing with the growth of the city, makes it desirable that these small sections be kept free for breathing spaces in the densely built up and crowded town of the future.

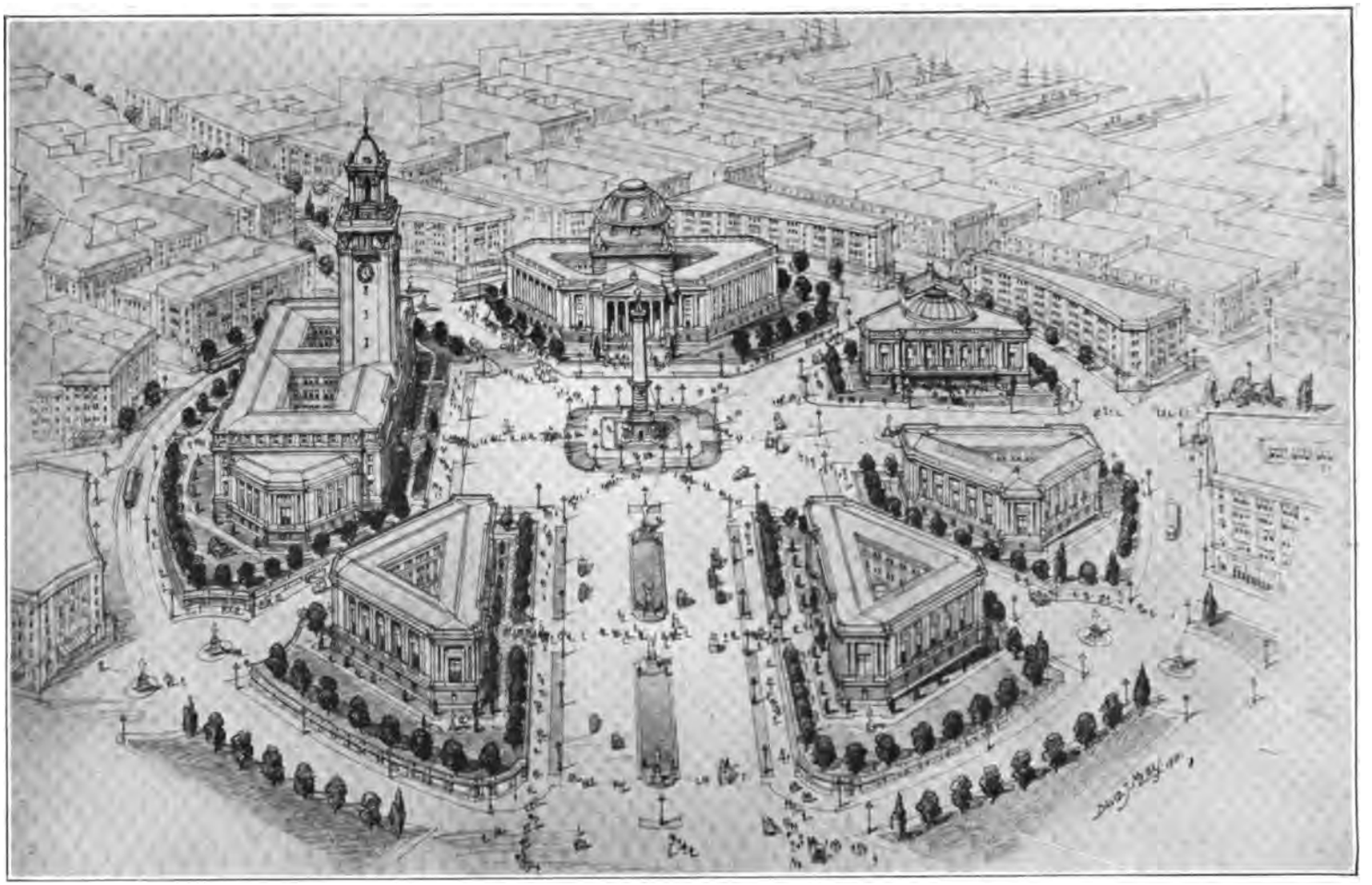
A Civic Center which is to signify the character, the force and the confidence of a city like Seattle, where only the loss of the commanding qualities she has always possessed can delay a wonderful advance to prominence among world cities, must be more than a makeshift—it must have the air of far-seeing urbanity which cannot be manifested within narrow limits.

Such a location is the one proposed at Fourth Avenue and Blanchard Street. Not interfering with the natural trend of business advancement, it yet occupies a site serving all the people with impartiality. It has a magnificent setting, visible from all the environing hills and from the harbor and Puget Sound. To appreciate its full significance, one has but to regard its inspiring possibilities from the surrounding heights or from just beyond the immediate harbor line. Equipped with buildings worthy of a city destined to rank among the great world ports, the voyager, approaching the busy water frontage of the coming days, must find Seattle almost without peer in gracious visual command.

Not less impressive would be the view within and from the Center itself. Detached from structures of more ordinary character, by a circumferential thoroughfare, its noble buildings would emphasize the natural and exceptional beauty and dignity of their environments.

With Mount Rainier looming over the city on the south, the rising terraces of encircling hills, the lofty, snow-capped Olympic peaks closing the westward view beyond a harbor unsurpassed, it would appear that greater opportunities for high and permanent distinction never fell within the privilege of a municipality. No more extravagant is the hope of the culmination of this project than, but a few years ago, would have seemed the prophecy of Seattle's existing actuality.

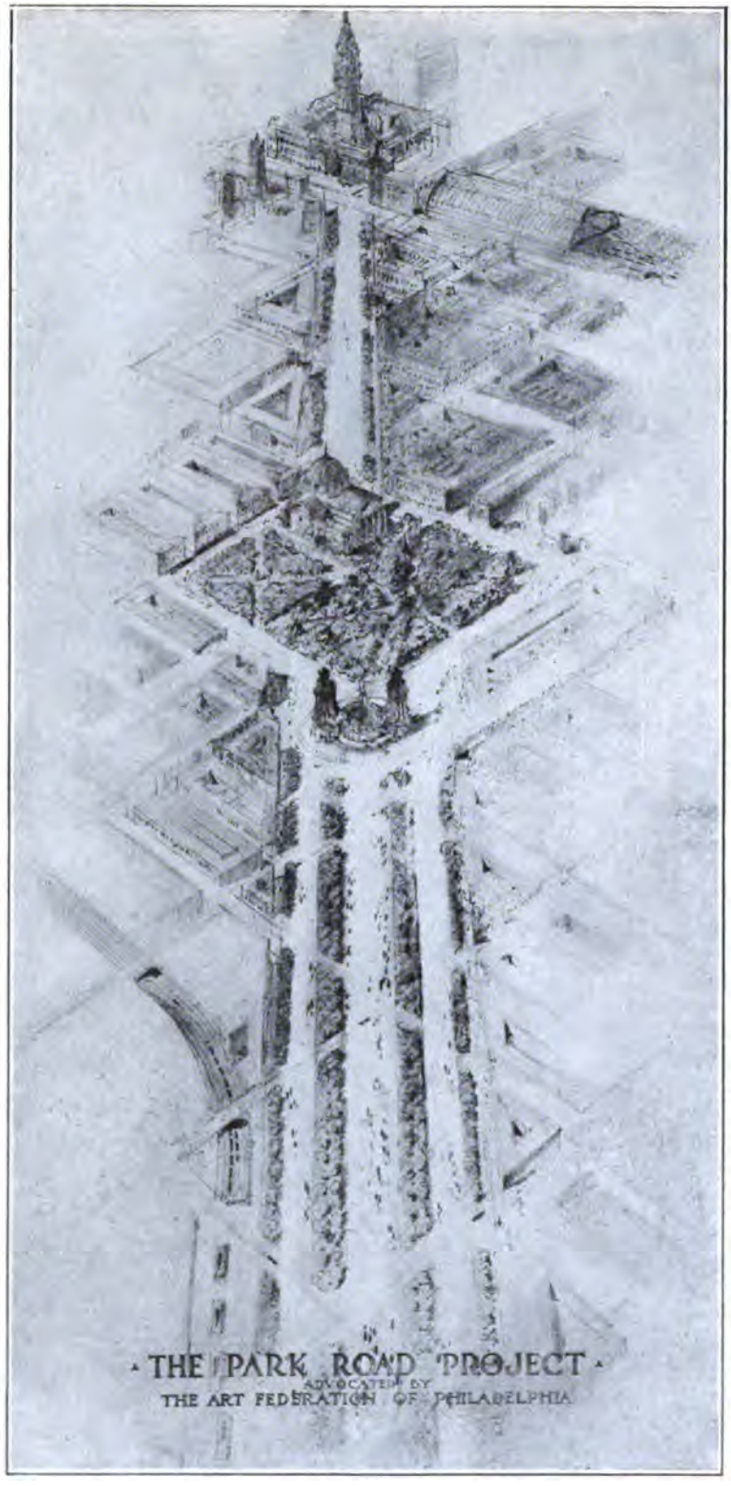
With breadth of vision and steadfast purpose, with a disregard of purely self-seeking interest, in consideration of the GOOD OF THE WHOLE, before her citizens realize it, Seattle will have accomplished these things, and she will have translated her commercial and civic activities, her ambitions and determinations, into terms of ART, ART in its truest and highest significance, "THE DOING WELL OF WHAT NEEDS TO BE DONE."



Civic Center Group, looking South on Central Avenue

Schmitz Park Scene, Seattle

Volunteer Park Scene, Seattle



Fairmont Park Entrance to City Hall, Philadelphia

Park Improvements

THE general plan prepared by Olmsted Brothers, under which park and boulevard development is now proceeding, covers the situation so thoroughly within the present city boundaries that nothing need here be proposed in the way of extensions. Beyond the city limits, however, in the territory over which the future "Greater Seattle" must spread, parking features will be required and should be liberally provided for well in advance of the city's expansion. Some selections for such park and boulevard locations have been made and their general description follows: The development of the public school system has been so marked, and the public playground idea has won such proper recognition, that there is an increasing and just demand for more playground area within the present city limits. Selections for this purpose have therefore been made both within the present city and in the outer districts over which municipal expansion is expected.

PARKS

The following tracts have been selected and are suggested for park areas outside present city limits. Detail legal descriptions are set forth in Appendix No. 2, with corresponding tract numbers. Only general descriptions of locations and principal features are here given.

(1) A site comprising 235 acres, situated just north of Richmond Beach, Snohomish County, which includes half a mile of salt water frontage and runs back to elevation of about three hundred feet above sea level. Its precipitous bluff and numerous small gulches lend themselves to scenic park development. The tract is of no great value for other purposes.

(2) A tract of 150 acres lying on the north, east and south shores of Lake Ballinger, which combined with the small island in the lake, is capable of most attractive development. This site is located so as to be conveniently reached by both ordinary highways and park boulevard development, as well as by electric railway transportation. This site is also in Snohomish County.

(3) A sightly area of 475 acres just north of Lake Washington, covering a commanding hill overlooking the country in all directions, with a clear vista southward over the whole length of the lake.

(4) A tract of 40 acres located on the high ground approximately a mile and a half south of Richmond Beach, which contains some forest desirable for preservation, has a commanding view of the Sound, and can be easily reached.

(5) A tract of 28 acres, well suited to park and parking purposes, lying along both sides of a gulch about one-half mile west of Denny Station on the Seattle-Everett Interurban, and also on both sides of Highway No. 30. The growth of small fir and other trees is particularly pleasing, and a desire to preserve their natural beauty prompted the selection of this site.

(6) A tract of 150 acres situated at the crossing of Central Avenue and Highway No. 31. Some very beautiful and well-preserved timber will serve to make this a valuable park acquisition with but little improvement necessary.

(7) A tract of 100 acres located just north of the junction of Highways

Nos. 33 and 36, commanding a view of Lake Washington to the eastward and including a strip leading down to the lake, through which a small stream flows.

(8) A site of 200 acres on the east side of Lake Washington between Bothell and Juanita Bay. It controls a commanding view to the northwest and over the greater part of Lake Washington to the southward.

(9) A tract of 60 acres at the junction of Central Avenue and Highway No. 33. This site includes a very desirable area, covered with a pleasing and natural growth, including fir and cedar timber of considerable size. It would require but little improvement for park purposes.

(10) A tract of 65 acres encircling Bitter Lake. The topography is adaptable to most attractive park development. It is easily accessible by highway, boulevard and electric railway.

(11) A tract of 50 acres at the intersection of Highway No. 33 and the Old Bothell Road. Including as it does both sides of a small stream, this location offers desirable parking opportunities.

(12) An area of 400 acres, including one and one-half miles of Puget Sound frontage directly north of the present city limits. This tract reaches back over the rugged bluff to an elevation of 250 feet above the water. Altogether it presents great possibilities of unique and varied park development.

(13) A tract of 65 acres lying along Highway No. 33 between its junctions with Highways Nos. 14 and 32. Covering both sides of a ravine, this site has desirable native growth worthy of preservation, and is accessible by four main arterial highways from four directions.

(14) An area of 160 acres on the ridge east of Kirkland, just south of the "State Aid Road." It contains fine timber and other native growth valuable for park purposes, and the site would require but little improvement.

(15) A small park area of 22 acres on the ridge east of the Ravenna School in the approximate vicinity of Thirty-fifth avenue Northeast and East Seventy-fifth Street.

(16) An area of 15 acres immediately enclosing the Green Lake Intermediate Reservoir.

(17) Eighteen acres surrounding the Green Lake Low Service Reservoir.

(18) One hundred eighty-five acres occupying the high ground on the north end of Mercer Island.

(19) An area of 100 acres on the hill west of Renton, overlooking the valley, Lake Washington and Mercer Island.

(20) Twenty-seven acres, near Highway No. 58 at river crossing, in the vicinity of Black River Junction. This area will be bordered on three sides by main highways.

(21) Sixteen acres lying on the south shore of Lake Burien.

(22) A beautiful and commanding area of 100 acres, including the high ground at Three Tree Point, with about 1,250 feet of salt water frontage along the southerly shore line. The tract reaches back upon the high ground to an elevation of 400 feet above the Sound. It contains a wealth of natural growth admirable for park uses, and will require but slight improvement to become very attractive.

PARKWAYS

(a) An extension along the West Seattle waterfront of the proposed parkway of the Olmsted system, from Fauntleroy Cove to the proposed park

at three Tree Point. This suggestion simply continues the parkway of the Olmsted plan southerly along the shore line to the limit of the civic area covered by this report. The width of this parkway should be from 300 to 500 feet, as indicated on Map No. 3. At a few points it should be even wider, affording necessary area for the proper development of roadways where gulches occur.

(b) A parkway from the upper portion of Three Tree Point Park, leading easterly on a slightly different line from the main highways, to the vicinity of the Duwamish River, about one mile from the mouth of Black River. This parkway requires a strip from 300 to 500 feet wide and is susceptible of similar development to other parkways proposed by present city plans.

BOULEVARDS

In connection with the arterial highway system certain routes offer easy and direct connections between proposed park areas. It is therefore suggested that these arteries be considered as boulevards, combining parkway features with those of traffic streets. For this purpose a width of at least 160 feet should be provided, to be subdivided as may be found desirable, particular reference being given to the planning of the roadways so as to permit widening when found necessary. The areas adjacent to both the parkway and traffic roads should be reserved mainly for grass and shrubs, planting trees in such locations only as will enable the future development of roadways to be made with the greatest freedom when traffic demands, the first construction being kept to a minimum width, so as to reduce cost.

It is suggested that this plan of boulevard improvement be applied to the following highways, and that their width be made 160 feet for this purpose:

(c) Central Avenue, from its junction with Highway No. 33 north to the Snohomish County line.

(d) Highway No. 30, from Eighty-fifth Street to its junction with Central Avenue.

(e) Highway No. 33, from Eighty-fifth Street to Bothell; also on its west branch to a junction with Central Avenue.

(f) Highway No. 36, from Eighty-fifth Street to a junction with Highway No. 33.

(g) Highway No. 62, from Bothell to Renton.

(h) Highway No. 65, from a junction with Highway No. 63 just south of Northup, leading around near the waterfront to a connection with Highway No. 62 at a point east of the mouth of Mercer Slough.

(i) Highway No. 24, along the west shore of Lake Washington. This may appear to conflict with the parkway outlined in the Olmsted plan, but is not so intended. It should be developed in harmony with the present and future plans of the Board of Park Commissioners of Seattle.

(j) There are a number of wide cross streets in the tide flat section, such, for instance, as Holgate and Hanford Streets, which will not be required for full width use in certain sections for many years to come. They might economically, and with advantage to that industrial and railway section, be originally improved with central glass plats and shrubbery; a series of miniature parks being thus produced which can be obliterated as necessity demands.

Similarly there are at least two large open places, originally provided for possible railway connections by easy curves, at the intersections of Second Avenue South and Spokane Street, and at Holgate Street westward from Occidental Avenue. These may well be planned for improvement when tracks are elevated, the Park Board to take charge of them and improve and maintain them for an indefinite period as attractive and healthful breathing spots amid the surroundings of industry and commerce.

PLAYGROUNDS

More or less of private effort has always been directed toward the amelioration of conditions among children who from necessity or other circumstances live in the thickly settled districts of large cities. Well directed effort has shown commendable results in the way of supplying diversion from the dearth of interest and occupation engendered by the conditions in which many children are compelled to live.

So far as this voluntary private effort has gone, its results have been a source of gratification and encouragement to those who have undertaken such activities. It has, however, gone far enough to convince many people that the conditions surrounding childhood determine in a large measure the character of the man; that childhood environment actually counteracts inborn characteristics and tendencies; that to improve conditions, even for a portion of the child's waking hours, is a powerful factor in the evolution of the best that is in him.

Conditions most pitiable, precluding the development of any proper individuality, have changed the whole mental and moral focus of children thus environed, and placed them in the path which leads to their punishment as offenders against the rights of law-abiding citizens.

Asylums and paternal institutions, where unfortunate children are reared in a secluded community, have long existed and have sought to supply the training otherwise unprovided for such children. It has, however, become a matter of comparatively recent experience and conclusion that these institutions and others of their class have awakened to the underlying need of the child nature for those diversions which the conditions referred to preclude. It is only necessary to reflect that the same inherent possibilities dwell in the soul of the most forlorn waif as in that of the child born to more fortunate circumstances.

It has remained for this epoch, which has witnessed the greatest industrial improvements and is opening to all classes an immeasurably broader view of life and enlarged opportunities, to intelligently supply just that supreme childhood need to those who are born to conditions without the possibility of a normal child life, than which nothing can be more beautiful. From the altruistic work to improve childhood environment, the beneficial effects have at least compelled recognition of the fact that in no other way can more abiding results be secured.

The taxpayer now knows by statistics of unquestioned accuracy that the maintenance of places of healthful exercise, amusement and self-improvement for those who would otherwise pass their formative years in adverse, and possibly degrading, circumstances, is more profitable than that of reformatory institutions for children and penitentiaries for adults.

The movement to interest and benefit children in cities has not stopped with the procurement of playgrounds, but apparatus and facilities for the di-

version not only of the children but also of adults have been introduced. Training and instruction is provided, along with care and safeguards. Those who learn to play well will be more apt to work with a purpose. The application to playground training and practices of the principles evolved in connection with the work of teaching the useful trades, while not forcing the child's efforts, will go far to impress the lesson that amusements which produce tangible results are more satisfactory than those which are aimless, even though requiring the same amount of effort.

At least a threefold benefit accrues to the public from the development of public playgrounds, viz.: the arrest of disease and vice; a constantly decreasing prison-roll; the preparation of a generation of useful, law-abiding, industrious citizens. It has been abundantly proved that these results follow such provisions for the child's welfare.

Who can estimate the benefit the child thus receives? One has only to visit a few of the well-organized playgrounds in this city to see how a child's whole existence can be revolutionized by the intelligent direction of those in charge. All sorts of rational exercises and amusements are provided to fill hours which might otherwise have been spent in wretched diversions. A picture of the conditions from which such public playgrounds may spare the child need not be drawn. Every one has seen, and too many have experienced, the conditions surrounding the children in crowded centers.

Seattle, while not feeling the stress of necessity in this respect so apparent in older and more crowded communities, has already done much to improve the conditions surrounding childhood, just as has been provided a splendid school system for the training of her youth. With a rapidly increasing population, constant watchfulness and anticipation of needs is necessary if these provisions for the children are to multiply with the rate of population.

Widely separated parks do not perform the functions of the playground. With the growth of the city care should be taken that numerous, even though comparatively small, areas be acquired for the benefit of children who will soon be her active and controlling citizens. The quality and direction of their activities will depend largely upon their early environment and opportunities for healthful recreation.

For the reasonable and progressive development of playgrounds for the present and future City of Seattle, the following sites have been selected and the general description follows, detail legal description being set forth in Appendix No. 2, with corresponding tract numbers: Following consecutively those used heretofore in listing tracts selected for park purposes, Nos. 1 to 22 already applied to park tracts.

(23) A tract of ten acres about two and one-half miles south of the Snohomish County line near the Seattle-Everett interurban line.

(24) A ten-acre tract one mile northeast of the Green Lake Intermediate Reservoir, enclosing the ground now occupied for school purposes in that location.

(25) Blocks 133, 136, 145 and 146 of Central Addition to Kirkland.

(26) A small park and playground area of about fifteen acres at the junction of Highway No. 62 and a main highway leading southeast toward Newcastle. This site is outside the region covered by this report.

(27) A ten-acre tract near the intersection of Thirty-fifth Avenue Southwest and West Graham Street.

(28) A tract of nine and one-half acres near Thirty-sixth Avenue Southwest and West Barton Street.

(29) A park and playground tract of thirty-seven acres lying east of Highways Nos. 45 and 46 and enclosing a small lake in Sections 6 and 7, T. 23 N., R. 4 E.

(30) A ten-acre tract just east of Highway No. 6 and about midway between the junction of Highways Nos. 55 and 46.

(31) A tract of thirteen acres lying west of Highway No. 56, between Highways Nos. 55 and 57.

(32) An area of nine and one-half acres in enlargement of the present school ground southwest of Foster Station.

(33) An area of fourteen acres for park and playground purposes, including the ground already occupied by the Renton High School.

(34) A park or playground tract of about six acres lying just north of Cedar River and west of the Columbia and Puget Sound Railway at Renton. This would be an attractive and popular place of assembly for the residents of Renton.

(35) Ten acres, including the present school property at Sunnydale.

SUBURBAN BOULEVARDS

Seattle enjoys a scenic location possibly unparalleled by any city of the world. The Cascade and Olympic ranges are the borders of a landscape as varied in its natural features as any similar area upon the globe. Combined with an unequaled summer climate, Seattle, sitting upon her hills amid this wealth of scenic environment, should develop as the tourist center as well as the commercial metropolis of the Pacific Northwest.

To accomplish this and to serve the Seattle of tomorrow, with a million or more population, it will be necessary that boulevards or good roads, as extensions of boulevards outside the metropolitan area, be constructed and maintained to the various points of beauty and interest. Whether this work be done by city, county or state, or by co-operation between them, need not be discussed here. A few suggestions will indicate the wealth of possibilities in this respect. The following should form at least a part of a system of suburban boulevards:

(1) An extension to and around Lake Sammamish and on to upper Snoqualmie Falls.

(2) Up Cedar River Valley from Renton to Cedar Lake; encircling the lake and crossing the Cascade summit to Lakes Keechelus and Kachees; spur to Stampede Pass and Snowshoe Butte, the highest accessible outlook in this Cascade summit region; also a spur to Snoqualmie Pass.

(3) From the Cedar River Road, via Rattlesnake Prairie, to Salal Prairie, thence up the Middle Fork of the Snoqualmie River, connecting with the road from Lake Sammamish at Salal Prairie. Upon the Middle Fork will be found mountain scenery on the grandest scale.

(4) A boulevard to Tacoma along the crest of the bluff overlooking Puget Sound.

(5) A boulevard to Mt. Rainier National Park.

(6) Combination of land and water routes to Lake Cushman, Lake Crescent and other attractive Olympic Peninsula points.

The mountain roads should be not less than twenty-four feet wide, well drained and thoroughly well built, and so located as to occupy points of van-

tage where, from small concourses, views may be had which will, in most cases, be of surpassing interest. In this regard, Cedar Lake is destined to add to its fame as the source of purest water and of electric light and power, that of entrancing scenes which lessen the care and fret of life. There may be, somewhere, a lake which exceeds this in grandeur, but where can one be found which presents scenes of more picturesque beauty? The wooded slopes reaching from the lake to the summits of the giant spurs and of the Cascade Range, with their depressions, bold headlands and promontories, inspire one with a sense of rest and peace and with the thought that "The groves were God's first Temples." The city should preserve these forests in primeval glory by removing only the very mature trees.

So long as human habitations are not permitted in this region, there is not the slightest reason why the road should not be built and used under restrictions that would preclude any tendency to water contamination.

Snowshoe Butte stands in the Cascade Range slightly southwest of Stampede Pass, and distant therefrom possibly two miles. The Northern Pacific skirts its base eastward from Weston three miles. If in this vicinity one leaves the train and climbs the slope, the summit of Snowshoe Butte will eventually be reached. Here grand mountain views can be had in all directions, while looking southwestward the vast bulk of Mount Rainier, hoary with its thousand ages, lifts its form far above environing peaks. This grand scene is awe-inspiring, like that from Inspiration Point in the Yosemite, and the beholder in this great solitude is deeply impressed with a sense of the Infinite Presence and begins to understand why the native Indian had but one God—the "Great Spirit."

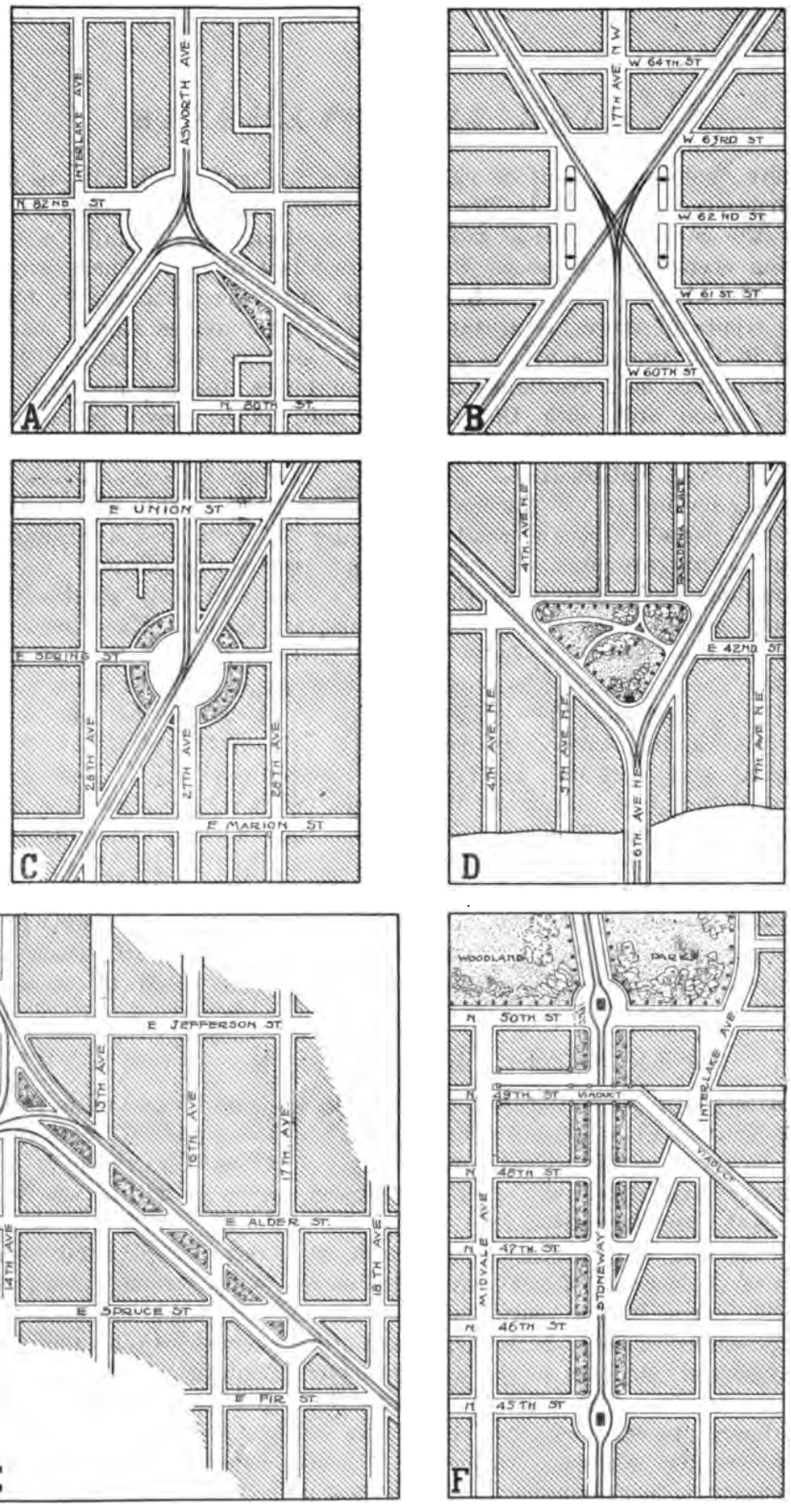
Seattle should have these mountain roads for the education, the joy and recreation of her own people, and for her guests who come from afar—even from beyond the sea—to gain health and strength, both of body and soul, amidst these scenes of wonder and beauty.

PARK COMPARISONS AND SUMMARY

Seattle now has 940 acres of park areas, improved and unimproved, within the city limits; also 73 acres of playground areas and 50 acres in boulevard parking features, public squares and triangles. Altogether there is a total of 1,063 acres devoted to park and playground purposes within the 38,157 acres of land in the present city limits.

This report, covering an added area of about 57,600 acres, proposes an addition of 2,669 acres of park areas, 161 acres for additional playgrounds, and about 200 acres in the park portions of the proposed boulevards and concourses. Approximately 3,000 acres are thus proposed to be devoted to park and playground purposes in this area of expected municipal expansion.

In comparison with other cities, this is not a large proportion for park areas. There are cities of less population and less area than Seattle which have a far greater proportionate park area. Several cities have as great an area in a single park as that included in the Olmsted plan and in this report for Seattle. It would indeed be a fitting climax to all park possibilities and commensurate with the greatness of her opportunity and destiny, if Seattle should ultimately acquire Mercer Island and set aside this 4,000 acres as an island park—a people's playground, worthy of the city of millions which will some day surround Lake Washington.



Municipal Plans Commission

of the

City of Seattle

Suggestions for treatment

of

STREET INTERSECTIONS

at

Various points in the City

Scale

0 1 2 3 4 5 6 7 8 9 1000 Feet

September 1911. **Virgil G. Bogue Engineer.**

PLATE NO. 7

Waterloo Palace, London.

Rue Leys, Antwerp

Board of Trade Building, Marseilles

Avenue de l'Opera, Paris

Rue Soufflot and Pantheon, Paris

Municipal Decorations

STREET INTERSECTIONS AND CONCOURSES

STREET intersections are points of natural traffic congestion. In busy districts they should be expanded to relieve this condition which grows rapidly worse with the increase of population. At the 1910 Town Planning Conference in London a speaker vividly described the wasteful results of a certain nearby street intersection, as follows:

> "At this moment some hundreds of people, within a hundred yards or so of this spot, and dozens of motors, horses and vans, and pounds and pounds worth of goods are all being held up in order to allow other people, horses and goods which have just done their turn at wasting time, to pass."

The character of these spaces will vary greatly from the simple right angle intersection of streets in residence districts to the great centers of diverging avenues around which will develop local business activities and through which principal traffic routes will pass.

In the latter locations open spaces of ample size to accommodate a constant flow of traffic should be provided. A studied treatment of building facades will, in such cases, serve best to give interest and distinction. Suggestions for such points of intersection are illustrated in Sketches A and B, on Plate No. 7.

Intersections which are incidental to the crossing of main traffic lines in residence districts or in localities not centers of large business may properly receive a less severe treatment and thus serve as community breathing spaces and minor shopping centers. Sketches C and D, Plate No. 7, illustrate possibilities in such cases.

Sketch E, Plate No. 7, suggests a method of relieving congestion where for a distance heavy traffic arteries coincide, providing a point of interest for the surrounding neighborhood and greatly enhancing the desirability of abutting properties.

Suggestion also is offered for a park approach in Sketch F, Plate No. 7. The lack of relation between many city parks and their approaches is unfortunate and detracts largely from their effectiveness. Chicago has given broad recognition to the desirability of attractive approaches to her many parks, in many cases connecting them through the built-up business sections of the city by parked boulevards.

At the London conference above referred to, Rt. Hon. John Burns summed up the matter in the following words:

> "It is the wisest insurance a big city can make to spend money in the development and improvement of the citizen's environment. In the past property owners seem to have thought that parsimony

meant economy. Therefore they narrowed streets and contracted spaces and looked upon a beautiful vista as the eighth deadly sin. If planning is neglected at the beginning, or badly done through timidity or lack of imagination, it places a burden upon progress for fifty or a hundred years which is paid for seven or eight times over for the lack of prescience and daring."

Street and highway intersections where special treatment is or will be desirable are marked "C" on the arterial highway Map No. 2 and are located as follows:

(1) Intersection of Highways Nos. 30 and 31, in Sec. 1, T. 26 N., R. 3 E.

(2) Intersection of east branch Highways Nos. 30 and 31, in the SW¼ of Sec. 6, T. 26 N., R. 4 E.

(3) Intersection of Central Avenue and Highway No. 34, in the NW¼ of Sec. 4, T. 26 N., R. 4 E.

(4) Intersection of Central Avenue and Highway No. 31, in Sec. 8, T. 26 N., R. 4 E.

(5) Junction of East and West branches of Highway No. 30, Sec. 18, T. 24 N., R. 4 E.

(6) Intersection of Highways Nos. 33 and 36, Sec. 28, T. 26 N., R. 4 E.

(7) Junction of East and West branches of Highway No. 36, in Sec. 27, T 23 N., R. 4 E.

(8) Intersection of Central Avenue and Highway No. 32, in Sec. 31, T. 26 N., R. 4 E.

(9) Intersection of Highways Nos. 2 and 5, near Eighth Avenue N. W. and West Seventy-fifth Street.

(10) Junction of Central Avenue and Highway No. 10 near Ashworth Avenue and North Eighty-second Street.

(11) Junction of Central Avenue and Highway No. 9, near North Seventy-first Street between Fremont Avenue and West Greenlake Boulevard.

(12) Intersection of Highways Nos. 2 and 4, near Seventeenth Avenue Northwest and West Sixty-second Street.

(13) On Central Avenue (Stone Way) and North Forty-fifth Street.

(14) The junction of East and West branches of Highway No. 12, near Sixth Avenue Northeast, between East Fortieth and East Forty-second Streets.

(15) Junction of Highways Nos. 13 and 38, near Twenty-seventh Avenue and East Spring Street.

(16) Junction of Highways Nos. 19 and 38, near Fourteenth Avenue, between East Alder and East Jefferson Street.

(17) Junction of Highways Nos. 78 and 19, near East Spruce Street and Seventeenth Avenue.

(18) Junction of Highways Nos. 38 and 24, near Yesler Way and Ninth Avenue.

(19) Intersection of Highways Nos. 13 and 19, near Twenty-seventh Avenue South and Jackson Street.

(20) Intersection of Highways Nos. 22 and 24, near Dearborn Street and Fourteenth Avenue South.

(21) Junction of Highway No. 52 and California Avenue near West Alaska Street.

(22) Junction of Highways Nos. 41 and 52, near Thirty-ninth Avenue Southwest and West Alaska Street.

(23) Junction of Highway No. 41 and California Avenue, near West Morgan Street.

(24) Junction of Highways Nos. 40 and 45, near Twenty-fourth Avenue Southwest and West Cloverdale Street.

(25) Junction of Highways Nos. 39 and 45, near Twentieth Avenue Southwest and West Barton Street.

(26) Junction of Highways Nos. 45 and 46, near small lake in Sec. 7, T. 23 N., R. 4 E.

(27) Junction of Highway No. 6, and West branch of Highway No. 55, near center of Sec. 8, T. 23 N., R. 4 E.

(28) Junction of the East and West branches of Highway No. 55, near the South Quarter corner of Sec. 8, T. 23 N., R. 4 E.

(29) Junction of Highway No. 6, and East branch of Highway No. 55; the SE¼ of Sec. 8, T. 23 N., R. 4 E.

(30) Intersection of Highways Nos. 46 and 55, in Sec. 17, T. 23 N., R. 4 E.

(31) Junction of Highways Nos. 6 and 46, in the SE¼ of Sec. 17, T. 23 N., R. 4 E.

(32) Intersection of Highways Nos. 55 and 56, in the North part of Sec. 9, T. 23 N., R. 4 E.

(33) Junction of Highways Nos. 57 and 58, near S. W. corner of Sec. 14, T. 23 N., R. 4 E.

(34) Junction of Highways Nos. 60, 61 and 62, in the SW¼ of Sec. 17, T. 23 N., R. 5 E.

(35) Intersection of Highways Nos. 24 and 61, in Sec. 19, T. 23 N., R. 5 E.

(36) Intersection of Highways Nos. 56 and 57, in the SW¼ of Sec. 22, T. 23 N., R. 4 E.

SPECIAL CONCOURSES AND ESPLANADES

(37) Along the south side of Highland Drive, between Second and Third Avenues West, a concourse and esplanade is suggested as indicated on Map No. 2. An outlook built up with appropriate construction at this location would be a striking feature from the city and afford a fine view of the city and harbor, easily accessible for both pedestrians and vehicles.

(38) At Elliott Avenue and Blanchard Street an esplanade is suggested. This is in reality part of the Civic Center design. Blanchard Street is one of the radial lines from the Civic Center and offers the shortest course to the waterfront. The conditions at this proposed location are such as to afford the maximum of opportunity for a central waterfront outlook. It is peculiarly adapted to the convenient assemblage of large crowds to view water spectacles. Ample access to the waterfront for pedestrian traffic can also be easily arranged at this location.

(39) At Duwamish Head, on the promontory at the north end of California Avenue, an ample concourse with adequate outlook and park surroundings, is suggested. Here should be located, whenever opportunity may offer, the great civic monument of Seattle, typifying in some appropriate design the

spirit and purpose of the city. Such a monument must be commensurate with its massive promontory location, and be to Seattle and Puget Sound that which the Statue of Liberty is to New York Harbor.

HEIGHT OF BUILDINGS

Some reference should be made to the limitations of the height of buildings. If there ever was a time when the evil effects of the erection of skyscrapers was unappreciated or the consequences of that development not clearly foreseen by people interested in the sanitary and sociological conditions of our cities, that time has long since passed. It is apparent today to the casual observer. Some few American cities, which by their action give evidence of being abreast of the times, have regulated the height of buildings with a view to forestalling the evil conditions which obtain in the skyscraper regions of New York, Chicago and Pittsburg.

The argument for the skyscraper is that business needs the accommodations provided by high buildings. That this is not true is evident from the fact that all the buildings of over twelve stories in height in the city of New York would occupy space not to exceed both sides of First, Second, Third and Fourth Avenues between Yesler Way and Pike Street in the City of Seattle, and that today in the same district the average height of buildings is less than four stories.

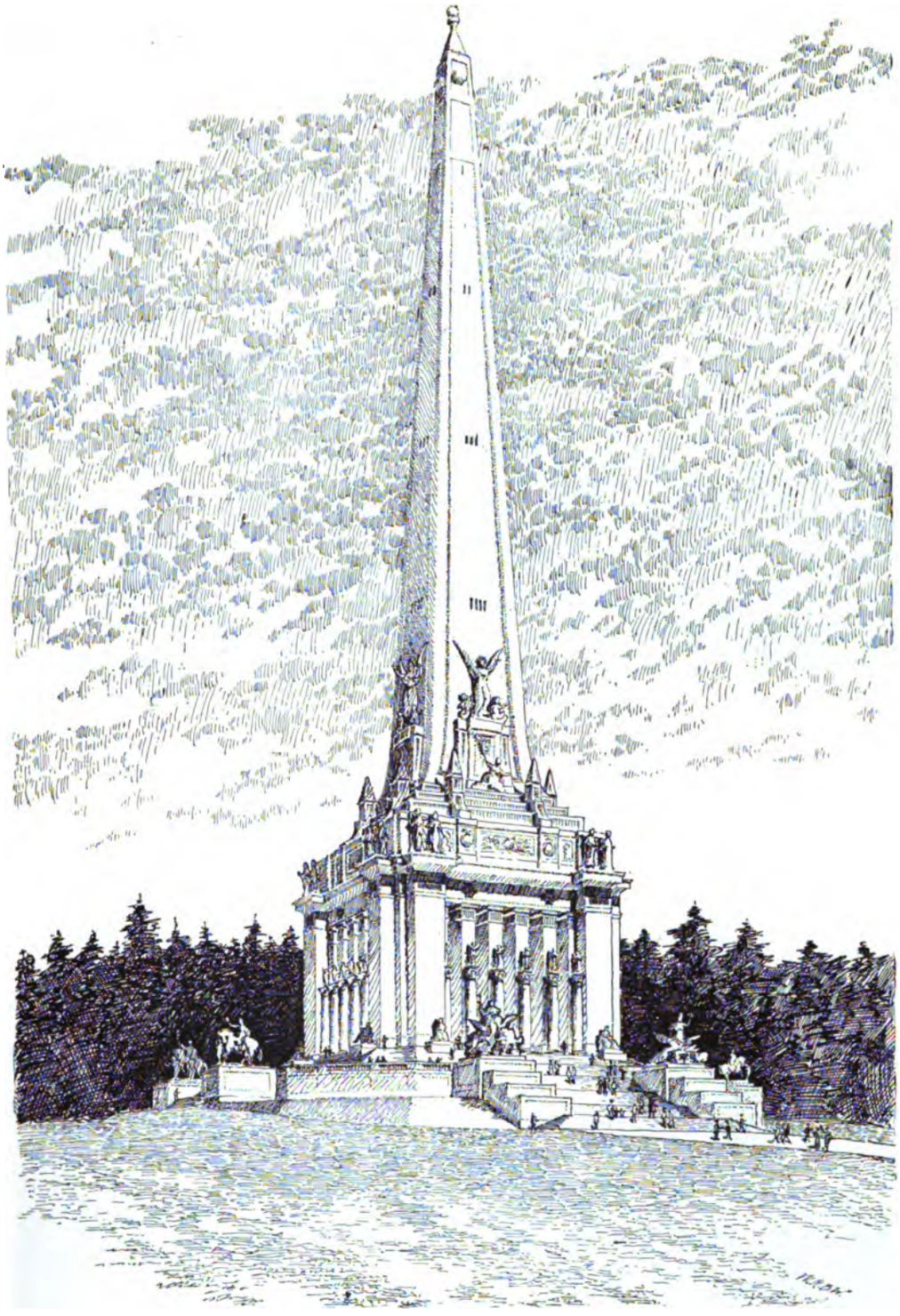
That the skyscraper is unnecessary is perfectly apparent from the fact that the great cities of Europe and South America—those whose population approaches or exceeds a million—have grown to their present size and have conducted a commerce equal to that of our largest cities, without the skyscraper as an adjunct and with every apparent indication that the rate of growth in commerce and population will be as rapid and as great as that of any American city.

It is unnecessary to demonstrate the curtailment of daylight and fresh air in the lower stories of skyscrapers or in the streets flanked by them. The contention that no such evil results follow the skyscraper is not made with seriousness today.

Their existence is due, solely, to the attitude of the American mind in attaching more importance to individual property rights than to community interest. Their removal can only be brought about by a change in the popular conception of proper social relations. Such changes can only be effected gradually, and for that reason it is futile to expect an early and general prohibition of excessively high buildings, but it is for the truly progressive cities to direct and hasten this outcome. Skyscrapers do not by any means denote the highest civic development; rather do they exemplify the utter lack of consideration for the better life of the city. Seattle should join the list of cities which have adopted a limitation of building height—Chicago, Boston, Washington, Buffalo, Cleveland, Minneapolis and Los Angeles—and prevent the ills which unlimited license in this respect is sure to entail.

The majority of the rooms in the skyscrapers require to be lighted artificially, the sunlight being shut out, and must also be ventilated artificially. As a result, they are both dark and damp, and are therefore breeders of tuberculosis.

The hazard from fire is so notorious that no comment need be made.



An Idea for a Civic Monument on Duwamish Head

Dock at Hamburg (Use of Movable Cranes)

Dock at Hamburg (Use of Movable Cranes)

Perhaps the most noticeable of the evil results is the congestion of traffic occasioned by the throngs attempting either to reach or leave such centers at the same hour. Were the offices and places requiring such numbers of persons distributed over large areas, a greater number of transportation lines would be used and the curse of the rush hours caused to disappear.

So important is this question from the standpoint of health, fire hazard and congestion of transportation, that emphasis has not been laid upon the aesthetic effects of the unregulated skyscraper.

The height of buildings in the city should be fixed at an elevation proportionate to the open area and if possible a similarity of treatment as to the height of stories should be regulated; especially should a uniform height of cornice line be established for the buildings in the Civic Center.

It may be well in passing to call attention to the desirability of using light-colored building material so far as practicable, in this climate, to brighten the aspect during the lowering days of winter. In business structures many of the lighter bricks and terra cottas are especially adapted to serve this end, while for the more monumental public and semi-public buildings a marble or light-hued granite should preferably be used. There can be no question that in the case of the buildings in and around the Civic Center white marble or granite should be adopted and used throughout. Only by such treatment can the desired unity of effect be obtained and the consistency of the whole design secured. Such constructions as the Courts of Honor at the Columbian or Alaska-Yukon-Pacific Expositions clearly indicate the need for and demonstrate the appropriateness of a uniform and light color scheme.

Harbor Improvements

IT is conceded by all that the key to the development of Seattle into a great metropolis, lies in a deliberate preparation to care for her fair share of the world's commerce. A study of the commercial ports of the world, which have shown the greatest growth in recent years and which today clear the largest tonnages, indicates that these ports have not depended for development upon chance or destiny. Their great and unexampled prosperity has largely been due to the progressive spirit and civic courage of their people, manifested in a scientific study of port conditions and a systematic effort to attract foreign commerce by means of increased harbor facilities which involved great expense.

To fully appreciate the importance of the plans herewith submitted, it is advisable that all public-spirited citizens consider the example of the older ports and the ways by which they have progressed.

Hamburg is today the greatest shipping center in Continental Europe. Its evolution is typical and remarkable. Though endowed with a rich hinterland, there was much to discourage its port development; in fact, it had to *make* its *opportunity.*

For sixty-three miles below Hamburg the river Elbe is a silting stream that requires constant dredging to maintain a depth of twenty-six feet at low tide, and yet, in trans-shipping and storage business this port enjoys advantages over all the other ports of the world. Its factories and warehouses are served with both water and rail transportation facilities, and are provided with elaborate handling and labor-saving devices. In addition to the sum of $100,000,000 said to have been already expended on harbor improvements, it recently voted $50,000,000 to be spent for extensions which should keep pace with the demand of its growing commerce and industries.

Rivaling Hamburg is Antwerp, the great port of Belgium, also a river harbor and a man-made port, which is another example of what may be accomplished with a narrow, silting stream. Antwerp, not a great deal larger than Seattle, is probably the wealthiest city, per capita, in Europe, and its wealth and growth have directly followed and been proportioned to its port development. When half the size of Seattle, it undertook harbor improvements involving an expenditure of $45,000,000. In thirty years, from 1874 to 1904, Antwerp increased in population from 153,169 to 301,647. That is, the city doubled in population, while its commerce multiplied itself between five and seven times. In now has under way a further extension of harbor facilities, to cost approximately $55,000,000, exclusive of river dredging and straightening.

Although Rotterdam is a very old city, having received municipal rights in 1340, it was never a large town until it undertook modern harbor improvements and provided its merchants with opportunities for international trade.

From a city of 19,000 inhabitants in 1850, it increased to a population of 320,000 in 1900, and in 1903 its inhabitants numbered over 400,000, or seven per cent of the entire population of Holland. From 1870 to 1908 Rotterdam expended $31,000,000 in harbor construction and equipment. Its rapid growth is recognized as being directly due to the development of its port.

Hamburg, Antwerp and Rotterdam have all CREATED OPPORTUNITIES. They have thereby cut deeply into the important trade, till then largely monopolized or controlled by London.

And London, grown sluggish with the assurance bred by centuries of monopoly in trade, has been forced to arouse herself in order to contest the competition, not only of continental ports, but of home ports as well. British ports, which lack the natural opportunities of London, have expended large sums on harbor improvements, as follows: Liverpool, $200,000,000; Manchester and Newcastle, $85,000,000 each; Glasgow, $44,000,000.

Manchester, determined to free herself from all the tolls of Liverpool and other ports and from excessive railway rates, proceeded under an act of parliament, dated August 6, 1885, to organize a company to build the Manchester Canal. The people of the entire city came to the support of the company and subscribed liberally. Under the original law the funds provided amounted to nearly $50,000,000, but subsequently the city furnished a loan of $25,000,000. The canal was not finished for traffic until November, 1893, and it was necessary for the city to incur a new obligation of over $5,000,000 to provide for interest. The canal company is now paying interest on the issue of bonds and will soon be paying off the city loan.

It was a great venture to build a canal from Manchester to the sea, a distance of thirty-five and one-half miles, having width at the top of 290 feet to 370 feet, and at the bottom of 120 feet to 170 feet and 26 feet deep.

To return from Europe to America, it will be found that from Montreal to Rio Janeiro and Buenos Aires there is everywhere manifest the recognition that, in order to participate to any great extent in modern commerce, the best harbor facilities must be constructed in advance of and as an invitation to trade.

Montreal, one thousand miles from the open ocean, has become the leading summer port, not only for the export of Canadian but of American grain. Fourteen million dollars have been spent upon the development of its port facilities, the greater part of this during the last five years. The exportations of Montreal have increased from $25,000,000 to $71,000,000 in fifteen years. It has today twenty-five steamship lines and is looking for new ones, including a line to Australia and New Zealand, notwithstanding the fact that it is closed for five months in the year by the ice in the St. Lawrence River.

Boston, with her wonderful natural harbor, was formerly among the leading ports of the world. But channels sufficient for the craft of former times have long proved inadequate for more modern requirements. Failure to recognize this fact, and grasp the opportunities provided by nature, brought about sure results. Industries fell more and more into the habit of depending upon railways for coastwise trade instead of water transportation, until Boston's waterways became atrophied in their functions. All this being in sharp contrast with the development of European ports, and with the lessons taught by Hamburg, Antwerp and Rotterdam, Massachusetts has at last partially awakened to its requirements and formulated plans for the improvement of existing conditions. And this was to meet the demands of the present and the future.

Following an appropriation of $3,000,000 last year, the legislature of Massachusetts, at its session just ended, appropriated $9,000,000 more, to

secure to Boston the initiation of such harbor improvements as changed conditions will demand.

New York, even with all its pre-eminent natural advantages, has left nothing to *chance,* and today a large proportion of the water frontage of Manhattan Island is owned by the city and is in charge of its Department of Docks.

In New York local business has largely forced the warehouses and industrial terminals over to Brooklyn and the Jersey shore. The demand for industrial sites, on or adjacent to the waterfront near New York City, has become so great that the authorities are planning, by dredging and filling, to transform the salt marsh on Long Island, called Jamaica Bay, into a great industrial port. Plans are not yet completed but the statement is made that the area of this proposed improvement, including land and water, will be forty-five and one-half square miles. All is to be laid out and arranged in accordance with a general water-and-rail transportation scheme that will give every lot and block intended for industrial purposes railway service, and, if not located adjacent to the waterfront, direct rail connection therewith.

The federal government, on June 25, 1911, made an appropriation of $250,000 with which to begin its portion of the work, which will ultimately cost approximately $7,430,000, this large amount to be devoted only to the fairway and entrances thereto from the sea. The work to be performed by the Dock Department of New York City will ultimately cost a great sum, running as high as $70,000,000 in some estimates, but definite figures are not yet obtainable.

Notable in the history of the development of port facilities is the great Bush Terminal Dock & Warehouse Company, a private enterprise located in Brooklyn on New York Bay. It comprises seven modern piers fourteen hundred feet long, and so successful has been the undertaking that New York City is now considering the purchase of its waterfront facilities.

Think of seven piers twice as large as the Colman and Grand Trunk docks, with fire-proof warehouses in their rear, then a large car storage yard, and further back still and to one side, a series of great storage and manufacturing lofts in direct connection by rail with the docks and warehouses, the railway operated electrically, and you have an idea of the modern harbor improvements, which, in the development of the famous Bush Terminal, has attracted such widespread interest in the commercial and industrial world.

The slips are wide enough to allow barges to lie alongside of the slips. There are also ferry connections both for rail and street traffic, so that a big ship once tied at one of these piers is enabled, at the lowest rates, to have its cargo either stored or delivered to all parts of the port without any shifting of the vessel; likewise, cargoes are collected. There is practically no loading or unloading by trucks; there are no vexatious delays. The plant is also equipped with an $800,000 sprinkler system for fire protection, on account of which insurance rates on the goods in storage are from ten to twenty cents a hundred, while the rate in New York City is two dollars.

Importers, manufacturers and jobbers employ the Bush Terminal facilities for the collection of their wares from all ports of the world and for safe storage until marketed, or until the goods may be shipped by either rail or boat at the minimum of handling cost; or, as the case may be, raw materials be manufactured or put through refining processes under the most favorable conditions.

Montreal, Canada

Montreal, Canada

Bush Terminal, New York

Chelsea Dock, New York, West Street Front

Dock and Waterfront, Buenos Aires

This saving in cartage bills, cost of handling, lack of delay and insurance leaves to the merchant or manufacturer a larger percentage of profits, besides enabling him to underbid less favored competitors.

The lesson of such a private enterprise, which has nearly revolutionized terminal business, may profitably be applied to communities as a whole, for the city offering the most conveniently arranged harbor terminals and furnishing sites for industries and jobbers, near well arranged water-and-rail transportation facilities, is the city whose businessmen will be able to underbid their competitors and win prosperity for themselves and their commonwealth.

Philedelphia, although one hundred miles inland, has by no means neglected her opportunities. Chief city of one of the richest of the states, a center of manufactures, having many canals traversing the tributary country and, in addition, possessing thirty miles of actual deep water front, with a channel to the ocean thirty feet in depth, it is in such respects almost the equal of New York.

Baltimore, since the great fire, has expended $6,500,000 on a modern wharf and dock system.

The world-wide awakening to an appreciation of the latent possibilities of harbor improvement is inducing vigorous action at other ports along the Atlantic Coast and the Gulf, as well as at river and lake harbors and Pacific Coast cities. Los Angeles, San Diego, San Francisco, Oakland and Portland are each planning extensive betterments along their water fronts.

Los Angeles, as far as natural opportunities went, had no chance whatever to become a seaport, but by consolidation with Wilmington and San Pedro, *Greater Los Angeles* will have 22½ miles of shore frontage and about one hundred and eight acres of submerged land in and about San Pedro Harbor. An expenditure of $10,000,000 for harbor improvements during the next ten years has been authorized by the three boroughs.

Los Angeles has voted $3,000,000 and Oakland $2,500,000 for strictly municipal docks, while the people of California last November voted an issue of $1,500,000 bonds for state-owned docks in San Diego Bay, and $10,000,000 for the improvement and extension of the state dockage system at San Francisco.

The recent extensive construction of pier and dock improvements at San Francisco, including those built for the Western Pacific Railway Company, furnishes a good example of municipal tendencies along such lines.

Oregon has established the Port of Portland and the Port of Astoria, really waterway improvement districts of a considerable extent. The Port of Portland was established for the improvement and regulation of the harbor of Portland and the Columbia River.

Portland has already spent several million dollars of local money in cooperating with the federal government in the improvement and maintenance of the channels of the Columbia and Willamette Rivers, and last November adopted a charter amendment, which provided for a municipal dock commission with authority to issue bonds up to $2,500,000 for the acquirement of sites for public docks and warehouses, and the building thereof.

In Portland the Peninsula Industrial Syndicate is preparing to expend $3,000,000 on an industrial harbor, which, by reclaiming thirty-one hundred acres of the Columbia Slough will make available two hundred cheap factory sites of ten acres, all with fine rail and shipping facilities.

While this is, in a sense, a private enterprise, its magnitude and the spirit in which it is undertaken, give it also a semi-public character.

Commercially speaking, when a city ceases preparation for the future, it ceases to grow. To provide for increase of commerce, means for handling such increase expeditiously must be provided. Docks, warehouses, turning basins, railroads, traveling cranes, telpherage systems and other modern devices must be installed; and account must be taken that all these facilities will give even a city possessing but few natural advantages a fighting chance.

Seattle's greatest commercial asset is her harbor. Spacious and free from obstructions to navigation, it can be entered every day in the year; when Lake Washington canal shall have been completed, the harbor will offer the most generous haven in the world, where ships may lie in either salt or fresh water. With no extremes of heat or cold, no ice in the harbor, no winds exceeding thirty-six miles an hour, Seattle is two days nearer to the Oriental ports than is San Francisco, and four hundred seventy miles nearer to the Great Lakes at Duluth. Even from Seattle to Chicago, the distance is one hundred sixty-three miles less than from San Francisco.

With the completion of the Panama Canal, the New York shipper will have four thousand four hundred sixty-five miles to make in order to reach Honolulu; ten thousand forty-six miles to Yokohama, or eleven thousand six hundred seven miles to Hongkong, as compared with two thousand four hundred ten, four thousand two hundred forty and five thousand eight hundred thirty, respectively, from Puget Sound ports. Aided even by the construction of the Panama Canal, New York will require as long a time and as great ocean-transportation cost to reach the markets of Asia for the single trip as the Northwest via Puget Sound, for the ROUND TRIP. In these days of progress, when the great desideratum in the transportation schemes is the elimination of time, these conditions become important factors in the establishment of Seattle's maritime position.

Natural advantages do not, we must bear in mind, invariably determine the location of an important port. Unless a seaport city speedily emphasizes its natural advantages, it will encounter the danger of being outstripped by some less favored rival, which, by its own wide-awake efforts, will secure and hold over-sea trade.

The merchant marine of the world is not seeking a merely well sheltered harbor. It is demanding ports where cargoes may be obtained or unloaded with the greatest despatch and least cost. A live, energetic competitor, may, by constructing a breakwater, dredging a creek and building docks and warehouses equipped with economical handling devices, and served with conveniently arranged terminal tracks, present such inducements as to command cheaper charter rates than one provided with less terminal facilities, though of greater natural availability.

The function of a port, in general, is to provide for ready and effective exchange between land and water carriers. In particular, however, there are two special functions, *commercial* and *industrial.*

The commercial functions have to do with the handling of freight in transit. There are two classes of such business.

(1) THE CITY BUSINESS: This consists of passenger, mail and express service and the handling of package freight and other commodities which per-

tain to the needs and requirements of the city itself. The facilities for such traffic should be located near or convenient to the heart of the city.

(2) CARGO BUSINESS: This consists mainly of large consignments of freight in transit, or freight which may temporarily go into storage for future transfer to other points. The facilities for handling traffic of this nature need not necessarily be in proximity to the business center of the city. In fact, they may be advantageously located some distance therefrom and near the industrial port.

(3) THE INDUSTRIAL FACILITIES: These need not be located in proximity to the business or commercial center of the city. In fact, they should be some distance therefrom, where the surroundings and land values are such as to invite manufacturing and storage activities. The function of such facilities is to provide for the handling and storage of commodities required for manufacturing and industrial processes, and for the economical transfer of bulk cargoes or heavy products.

The industrial functions of the great world ports are of ever increasing importance. Manufacturing and industrial interests are being concentrated in such centers as provide best terminal accommodation. The successful cities are those which have become depots where the world's crude materials are assembled, manufactured and sent broadcast as finished products.

When we reflect that the cost of transporting five tons by wagon will cover transportation of fifty tons by rail, or five hundred tons by water, we obtain some understanding why industrial firms are looking for locations with both rail and water transportation, and we begin to appreciate the fact that Seattle's *harbor* is Seattle's *opportunity*; that with cheap power in abundance, an inexhaustible supply of coal at her very gates, and the vast resources of its hinterland, all that remains to be done by Seattle, the gateway to Alaska and the Orient, is to adopt a comprehensive scheme for its development and to take the initial steps to carry out the project *at the earliest moment possible.*

Seattle has at Harbor Island, and on both sides of the East and West Waterways, and also at Smith's Cove, extensive areas suitable for waterfrontage, which can be so improved as to provide the best facilities for cargo business or for general industries. When commerce offers there should be a perfect readiness for its reception. Otherwise, it will go elsewhere. The leading ports of the world have maintained their supremacy only by recognition of the principle of preparedness, and because of their willingness not alone to keep abreast of the times, but, as well, ahead of them.

The completion of the Panama Canal, the building of railways throughout the Northwest, including British Columbia, and the further development of Alaska, with its wealth and resources yet to be exploited, will but emphasize Seattle's important position.

Nothing is more certain than that a vast emigration from Europe will be brought to the Pacific Coast through the Panama Canal and that it will cause a rapid increase in population all through the region west of the Rocky Mountains. Immigration will come mostly in large steamers, carrying not only immigrants, but also freights. Seattle now recognizes that it may become the metropolitan center of this great westward movement, and the magnetic, as well as the strategic point in the inevitable struggle for world commerce.

Of all the recommendations to be made by the Municipal Plans Commission, those concerning the improvement and development of Seattle's *harbor* are of ranking importance. The increase in taxable wealth alone, aside from the income to be derived from the operation of the port, will more than pay interest charges on the bonds and retire the principal when due.

Every judicious investment in harbor improvements should tend to decrease, rather than increase the tax rate.

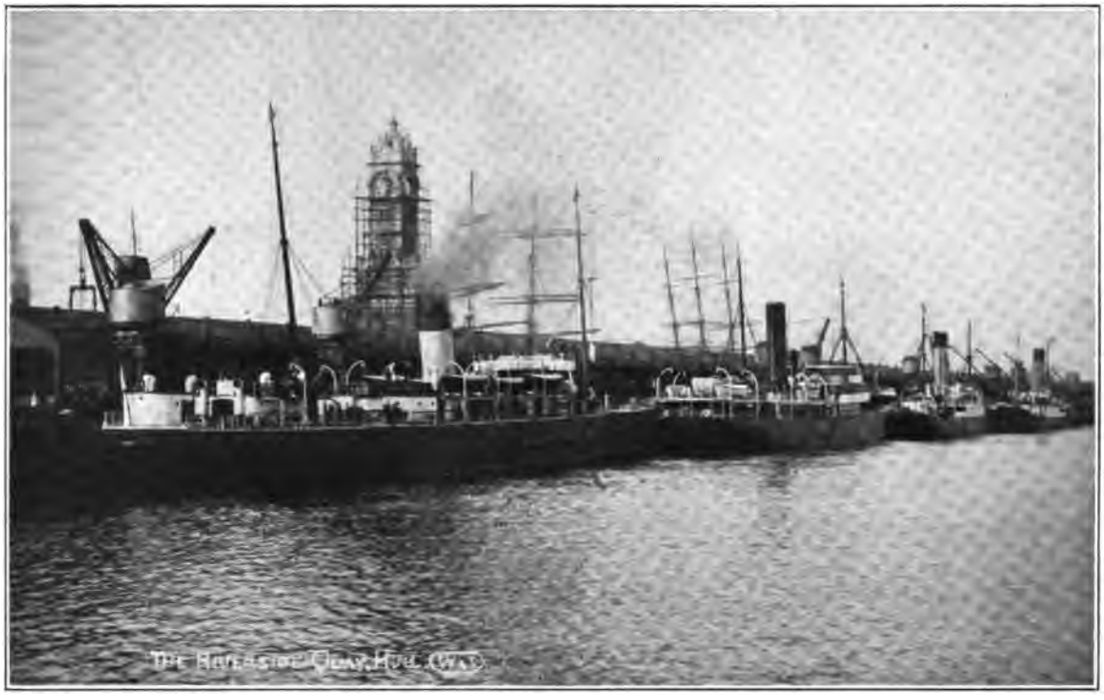
It is not necessary at once to provide all recommended facilities. It is essential, however, that a beginning be made. Effective steps for the development of Smith's Cove, Harbor Island and the Duwamish Waterway should promptly be taken. These, supplemented by the construction of the Lake Washington Canal, and the reclamation of swamp and tide areas now constituting a nuisance, give assurance of Seattle's commercial supremacy.

Dividends will follow improvements as soon as Seattle shall have first made the proper investment for her general upbuilding.

The earnest attention of the careful reader of the above division of this report is particularly called to the imperative need of Seattle's improvement of her waterfront, and to the easily comprehended lessons of past and present harbor attainment elsewhere. In no other department of public interests does *precedent* stand for more. For a good many years city after city has stepped into the ranks of the enlightened bidders for a worthy share of the commerce of the world. Not one case can be cited in which failure has resulted from generous, well applied effort to push to the uttermost all chances for notable improvement; and, in most cases, results have come so speedily as to be startling. Original outlays have been justified by satisfactory returns, encouraging still further drafts on the civic treasury and abundantly proving the substantiality of *civic enterprise.*

Some ports have been slow to recognize the force of a precedent so general as to almost constitute a law, but even they have gradually sought a place in the ambitious procession. If Seattle defers definite action in this regard, she will surely fall behind other competitors for the accumulation of world-wide trade which all the public works of present and future, notably the Panama Canal, are sure to bring to the Pacific Coast. It cannot be otherwise. The law of development is inexorable. It then remains only with the people themselves to write the story of Seattle's future state and glory, or unimportance and defeat.

The steps already taken to build the Duwamish Waterway and Lake Washington Canal are certainly in the right direction. But several years will pass before these public works can be fully utilized. Meantime, nothing has been effected toward improvement of the waterfrontage on Elliott Bay, except the recent organization of the Port of Seattle. What is *imperative* is prompt initiation of such construction as will provide Seattle with adequate waterfront facilities on *Elliott Bay. It cannot be too soon undertaken* in order to assure the world of this remarkable city's undiminished confidence in herself and of the future within her possibilities. Not only have natural position and environment given *almost audible* prophesy of the *may-be* of the years to come, but unlimited prediction can be hazarded as to what the mineral resources of the far north will bring to the port most accessible to their disposal and exchange.



Waterfront, Hull, England

Dock at Hamburg

Waterfront, Salina Cruz, Mexico

Port of Seattle

SEATTLE'S irregular and diversified waterfront requires varied treatment according to local conditions and the various functions for which the different portions are best suited. For the purpose of this report the question can be best considered by dividing the port into ten sections, to-wit:

(1) WEST SEATTLE DISTRICT (See Map No. 5), extending from West Florida Street northward around Duwamish Head, Alki Point, and south to Three Tree Point.

(2) HARBOR ISLAND (See Maps Nos. 6 and 7), including the waterfront and tide lands south of the Harbor Island pier-head line and north of West Oregon Street.

(3) DUWAMISH WATERWAY (See Maps Nos. 7 and 8), being the Duwamish River from the vicinity of West Oregon Street south to the vicinity of Orillia.

(4) CENTRAL WATERFRONT DISTRICT (See Map No. 9), extending northward from the northerly end of the East Waterway to Mercer Street.

(5) SMITH'S COVE-WEST POINT DISTRICT (See Maps Nos. 9 and 10), extending from Mercer Street, including Smith's Cove and thence to West Point.

(6) BALLARD DISTRICT (See Map No. 11), including the frontage on Salmon Bay, Shilshole Bay, and northward to the Snohomish County line.

(7) LAKE UNION DISTRICT (See Map No. 12), including the waterfront of Lake Union.

(8) LAKE WASHINGTON, WEST SIDE DISTRICT (See Maps Nos. 13-14-15), including the westerly waterfront from Bothell to Renton District.

(9) LAKE WASHINGTON, RENTON DISTRICT (See Map No. 18), including the frontage in the vicinity of Renton and the southerly end of Lake Washington.

(10) LAKE WASHINGTON, EAST SIDE DISTRICT (See Maps Nos. 15-16-17), including the easterly waterfront from Renton to Bothell.

The lengths and widths of new piers and slips shown on the maps accompanying this report have been assumed. The tidelands about the bay and adjoining shores are generally good dredging grounds, but detailed plans for actual construction will, in some cases, be determined by the results of borings made to disclose the character of material which would be encountered in dredging.

Long, wide slips and piers, however, are necessary facilities of modern commerce, and the Port of Seattle will surely have this fact in view in preparing plans for improvements.

WEST SEATTLE DISTRICT

The shore line of this district is mainly backed by high, steep bluffs, so close to the waterfront that only a narrow margin of shore and tidelands

is left available. This condition precludes extensive industrial development and limits the use of the waterfront to such business or traffic as can be carried on advantageously on the docks or piers or upon the narrow strip of land back of the marginal way. Certain parts of this district lend themselves naturally to special business purposes.

This is true of the section between the Northern Pacific's elevator near Fairmount Avenue and Ferry Landing at the foot of West Atlantic Street, which is now largely given over to yacht and motor boat anchorage. It is important that a haven for such craft be provided reasonably near the business center of the city, and no better location is available than that described. It is well sheltered and is better adapted to such small industries as would center about a motor boat and yacht harbor, than to larger commercial uses. (See Map No. 5.)

The limits of this harbor might be advantageously marked by the construction of recreation piers which would be designed as landings for the larger yachts and small steamers.

On the northerly side of the harbor, at the foot of West Atlantic Street, public ferry slips and piers for small steamers should be maintained, also gridirons and other facilities for the unloading of scows, lighters, etc. The location of these facilities at this point is practically fixed by present usage and by its connection with the street car service to the top of the hill.

North of the ferry landings the water shoals out to such an extent that piers of considerable length, suitable for the berthing of large vessels, may be constructed. At Duwamish Head a solid-filled pier should be constructed to act as a breakwater to the smaller boat landings south of that point.

Between the proposed filled-pier and the ferry landings at West Atlantic Street, there is a section where the fishing interests might advantageously concentrate. It would be well protected and would offer attractive berthings to the smaller as well as the larger fishing vessels. There is enough land back of the proposed bulkhead line to permit the erection of ice and cold storage facilities, so that plants for the larger concerns might readily be established in addition to public fishing docks for individual fishermen.

Alki Avenue, the marginal way in the section just described, will also have to carry the highway traffic, and should preferably be not less than 150 feet wide, to accommodate railway switching tracks, and for marginal way purposes as well as for through traffic.

From Duwamish Head to West Sixty-third Street the state tideland plat proposes a 160-foot marginal way located northwest of Alki Avenue.

The natural and economic development of this part of the waterfront should take place from the shore outward, thus enabling industries and business to be started in a small way without heavy initial outlay for filling or wharf construction. Later, the construction of slips and the filling of the land can be undertaken, as the growth and needs of business may require. To provide for the proper development, Alki Avenue and the proposed marginal way should be combined, the present eighty feet of Alki Avenue to serve as the highway portion. Not less than eighty feet additional width would be desirable for marginal way and switching track purposes.

The waterways proposed in the tideland plat are satisfactory for giving direction to such additional slips and piers as may be constructed.

In the vicinity of Fifty-seventh Avenue Southwest a ferry slip ought to be located at the public place proposed in the state tideland plat.

Alki Point, or such part of it as might be desirable, lying west of Sixty-first avenue Southwest, could well be utilized as a park. The extension of the existing bathing beach around Alki Point and the acquisition of a portion of the upland, would enable the city to develop here a marine park of great value. It is, in fact, ideal for such purpose.

From Alki Point to Brace Point, the present city limits, and for a mile south thereof, a marginal way is proposed in the state tideland plat. This section of the West Seattle waterfront is rapidly developing as a residential district and is, in fact, the principal salt water frontage available for shore residence.

The immediate needs of this section may be well met by the improvement and extension of Alki Avenue as a local undertaking. At certain places, notably West Alaska Street, Forty-eighth Avenue Southwest and Fauntleroy Avenue, where may be had reasonably easy grades from the waterfront up the hill, public landings and facilities for the delivery of merchandise, coal, building materials, etc., should in time be provided.

The public waterways and slips proposed on the state tideland plat are well located for such purposes.

South from the end of the state platting to Three Tree Point, there is not sufficient data available for laying out a waterfront plan. About all that can be said about it is, that it is feasible to construct a road along the foot of the bluff, which would provide an adequate driveway along the beach. Later, the marginal way will undoubtedly be extended in connection with the platting of the tidelands.

HARBOR ISLAND DISTRICT

One of the essentials of a great port is a place where commodities may be handled and stored in large quantities with the greatest possible economy. Such a location should lend itself readily to convenient railway connection and offer attractive berthing to vessels of the largest tonnage. There should be a balance between land and water frontage that will give storage and warehousing space sufficient for the receiving and assembling of cargoes without congestion and resulting delays. Such facilities would be much increased in usefulness if located near large areas suitable for industrial development. In short, what is needed is a *great harbor, freight and industrial terminal.* That portion of the tide flats commonly known as "Harbor Island," together with the land adjacent to the East and West Waterways, is admirably situated for development along such lines.

The East and West Waterways are laid out one thousand feet wide between property lines. It is doubtful if this width can be maintained at reasonable expense when sea-walls are being built, owing to the unstable character of the material alongside the waterways, which was largely pumped therefrom.

Two plans, however, have been made for the improvement, either of which is intended to lessen the difficulty and expense of sea-wall construction by lessening somewhat the width of the waterways, the fact being that, under all the conditions presented, a less width of waterways than one thousand feet

would, from practically every point of view, be satisfactory. One of these plans, Project A, provides a width of nine hundred feet for each waterway, measured between fender lines; while in the other, Project B, this width is seven hundred fifty feet. In the first there is an encroachment of fifty feet upon the waterways on each side thereof for wharves and sea-wall construction. In the second this encroachment is one hundred twenty-five feet.

Wharf construction should not be permitted to extend into the channel between the fender lines which will be established in accordance with the plan finally adopted.

The sea wall and wharf construction for both plans is taken up under the caption "SEA WALLS."

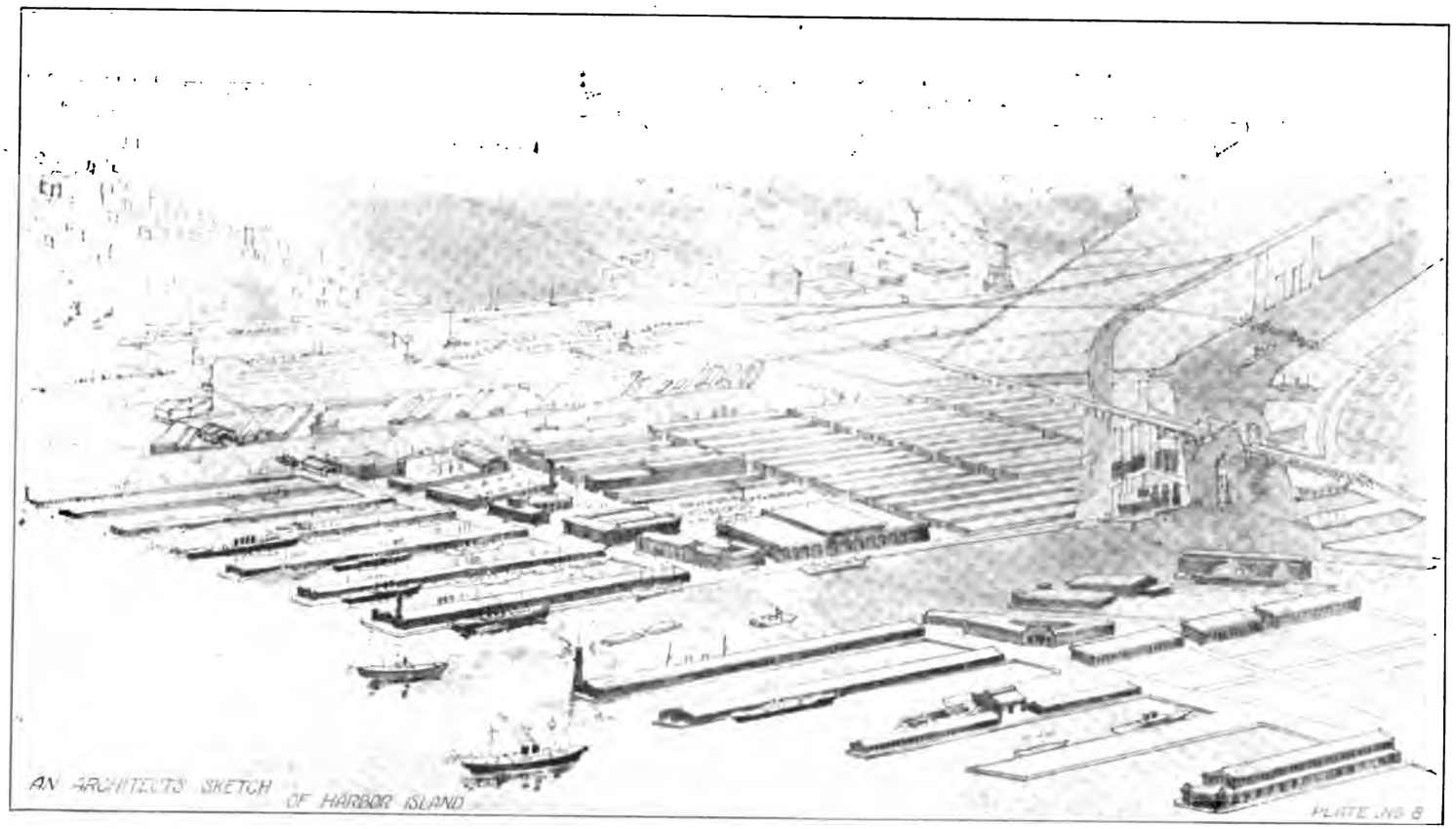
In accordance with Project A (See Map No. 7), marginal wharves would extend over the slope fifty feet beyond, that is, outside the property line. On these wharves tracks serving the frontage may be laid. The resulting net width of the actual channels between fender lines would then be nine hundred feet.

The entrance to Duwamish Waterway at the south end of the West Waterway is now laid out four hundred feet wide. This should be six hundred feet, between property lines, the extra width to be taken off the westerly side.

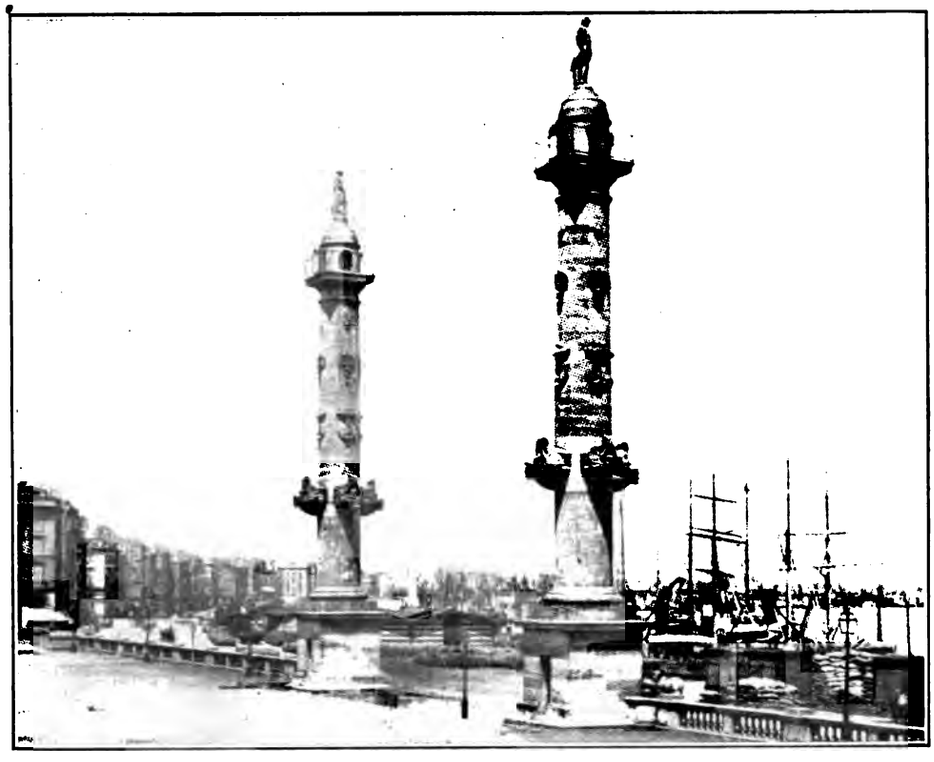
The bulkhead and fender-line arrangement of Project A, proposed for the waterways, is best adapted to this channel. This will give a clear entrance of five hundred feet in width. The present channel as laid out from the southerly end of the East Waterway, if kept open, would seriously interfere with railway and street connections to Harbor Island and the West Seattle Peninsula, and it should be closed to navigation. A channel two hundred feet wide at the top should be retained for the purpose of allowing a flow of water through and into the East Waterway, and to clear it of sewage, etc.

At the north end of Harbor Island there is room for the construction of seven piers averaging 1,500 feet in length. This would necessitate the dredging out of slips from the inner harbor line south to the northerly line of Railroad Avenue, but would be justified on account of the exceptionally desirable piers thus obtained. At the north end of the tide lands, lying between the West Waterway and Alki Avenue, six long piers may be constructed extending from the northerly line of Railroad Avenue outward. Additional lengths can be obtained for several of these piers by straightening the outer harbor line at that location to conform to the general alignment across Harbor Island.

At the north end of Harbor Island and the section west of the West Waterway provision ought to be made for ferry service. The most desirable locations for ferry landings would be at the central pier on the north end of Harbor Island and at the third pier west of the West Waterway. (See Map No. 6.) These piers should be designed accordingly. Ferry slips should also be provided at the ends of Railroad Avenue on the east and west sides of the East Waterway as shown on Maps No. 6 and No. 7 and Plate No. 9. A portion of Railroad Avenue fronting on the east side of the East Waterway is under lease to the Standard Oil Company for wharf purposes, which lease expires December 1, 1912. Similar ferry slips, if desired, may be provided at the ends of Railroad Avenue fronting on the West Waterway. In connection with the

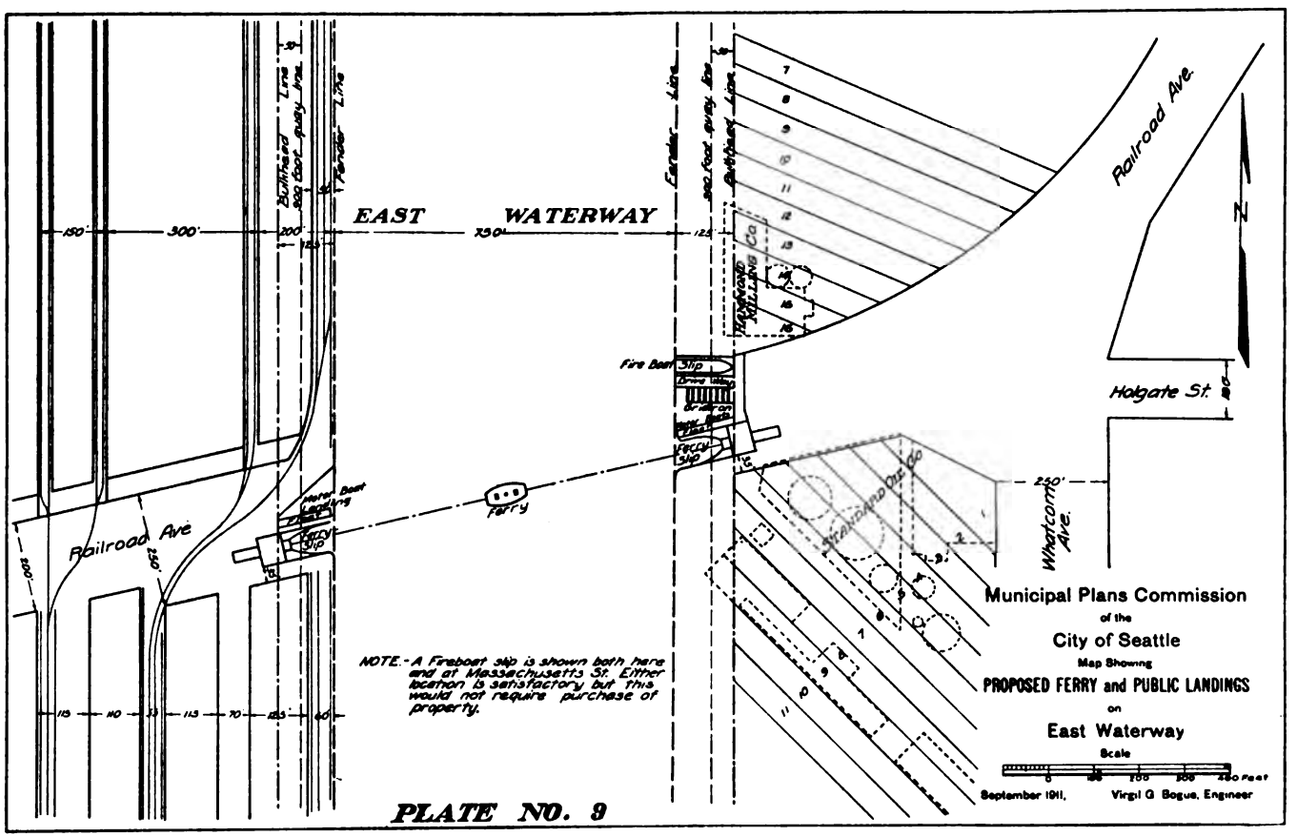


Suggestion for Terminal Treatment, Harbor Island



Watergate, Bordeaux, France

Thames Embankment, London


EAST WATERWAY
Railroad Ave.
Holgate St.
Whatcom Ave.
Railroad Ave
Ferry
Fire Boat Slip
Standard Oil Co
Municipal Plans Commission
of the
City of Seattle
Map Showing
PROPOSED FERRY and PUBLIC LANDINGS
on
East Waterway
Scale
September 1911.
Virgil G. Bogue, Engineer
NOTE.- A Fireboat slip is shown both here and at Massachusetts St. Either location is satisfactory but this would not require purchase of property.
PLATE NO. 9

port facilities in this district, there will of necessity be considerable business for motor boats and tug boats. Facilities for landing small boats should be provided at the shore ends of the slips and at other convenient places; especially near the ferry landings and in the vicinity of Spokane Street. At the southerly end of the West Waterway a public dock, together with facilities for small boats and barges, etc., should be provided, as it is an advantageous location for the delivery of coal, building material and other commodities destined for distribution throughout the west side ridge and Longfellow Creek districts.

In order to take full advantage of the opportunity for the creation of an economical terminal on Harbor Island, replatting of the property will be necessary. Back of the bulkhead lines along the waterways, sheds and warehouses will naturally be located for receiving or assembling goods to be stored for short periods of time. The remaining property can then be arranged as sites for warehouses and factory lofts, where goods destined for storage may be handled and commodities may be cared for, which may require repacking or passage through manufacturing processes before final distribution. The most economical buildings for this class of service are comparatively narrow and so arranged that railway tracks may be run lengthwise on one side of, or through, the buildings, while the other side fronts on the street. In conformity with this it is desirable that the land be broken up into narrow blocks and be divided by alternate streets and alleys, the alleys of sufficient width to permit laying of tracks. In carrying out this plan Kitsap Avenue and Sixteenth Avenue Southwest, which are now two hundred and fifty feet wide, may be reduced to one hundred feet. Industrial tracks should lead from switching tracks adjacent to the present Northern Pacific West Seattle line south of West Spokane Street, and should be made accessible to all railways by means of the present Argo yard holdings or other property south of Argo Junction.

The proposed marginal way along the easterly side of Duwamish Waterway should be extended on to Harbor Island, thus providing for rail and highway connections with the Duwamish Valley.

Street railway service can be furnished by means of a belt line connecting with West Spokane Street at the intersection of Kitsap Avenue, thence north on Kitsap Avenue to Railroad Avenue, thence west on Railroad Avenue to Sixteenth Avenue Southwest; and thence south to a connection with West Spokane Street.

The tidelands lying west of the West Waterway should preferably be replatted along the same general lines as proposed for Harbor Island, except that west of Twenty-sixth Avenue Southwest the blocks might advantageously be made wider to accommodate industrial concerns desiring more extensive ground areas.

The property lying between the West Waterway and Twenty-sixth Avenue Southwest, while it may be developed in accordance with the suggested development of similar property on Harbor Island, can be advantageously improved by the construction of slips as shown on Map No. 6. These tide lands are not yet filled, and on that account the dredging of the slips will be comparatively inexpensive and furnish earth for filling adjacent property. In case slips are cut in from the west side of the West Waterway, Twenty-sixth Avenue Southwest should be maintained at a width of not less than one hundred fifty feet, in order to serve as a marginal street and provide railway service to the property fronting on the slip.

Iowa Street, as now platted, should be vacated and a new street opened up from the vicinity of West Spokane street and Twenty-sixth Avenue Southwest, northwesterly to the intersection of Arizona Avenue and West Hanford Street.

The present Northern Pacific track, which runs diagonally across blocks, badly cutting up the property, should be removed and the switching and running tracks located on the new street and on private right-of-way, adjacent to Alki Avenue from Hanford Street to West Florida Street. The industry spurs would naturally lead off from these tracks.

The street railway line to serve this section, when required, should leave Spokane Street at the intersection of Twenty-sixth Avenue Southwest and run thence north on Twenty-sixth Avenue Southwest to Railroad Avenue; thence westerly on Railroad Avenue to Twenty-eighth Avenue Southwest; thence south on Twenty-eighth Avenue Southwest to West Spokane Street.

The second plan, project B, which proposes a net width of waterway of seven hundred fifty feet (see Map No. 6), is generally similar to the first. There is a difference, however, in the spacing of the piers and the property subdivisions. The marginal wharves extend outward one hundred twenty-five feet instead of fifty feet beyond the property lines, leaving the net width of seven hundred fifty feet between fender lines, which is not to be encroached upon by wharves or other structures.

The locations of the spur tracks serving the docks and properties, as indicated on all the waterfront maps, are not intended to be precise or definite, but are for the purpose of illustrating the general scheme of industrial railway service.

The replatting suggested for the Harbor Island District does not generally disturb the locations of existing ownerships and is physically easy of accomplishment. It is a matter, however, that cannot safely be left to numerous individual owners acting independently. To obtain the desired results the whole proposition must be worked out according to a general scheme. A company or association of owners, controlling the major portion of the property, might be able to carry out the project. The best results would, however, undoubtedly be obtained by turning the matter over to the port organization with power to acquire and improve property for general harbor purposes.

Failure to make the most of the opportunity to develop a port terminal in the Harbor Island District might have far-reaching results detrimental to the future of the city, consequently the best interests of the port and of all concerned make it desirable that the matter be not permitted to go by default.

It will be seen from the above and from perusal of the chapter on "Sea Walls," that this report favors the quay or bulkhead form of construction in preference to slip construction for the frontage of the East and West Waterways, and that these waterways should each have a clear channel of not less than seven hundred fifty feet as measured between quays and at right angles thereto. The quay form of construction is considered the best because it will provide suitable accommodation for the largest vessels and their immense cargoes. The disposal of the cargo of a big steamer on a pier of ordinary dimensions is not an easy matter, but along a quay or bulkhead, such as either side of one of these waterways would present, a vessel can be shifted from time

to time and thus find room for the cargo without piling it up to a height which makes its handling too expensive.

Soundings show that the waterways have a depth of twenty-eight feet to thirty-eight feet below extreme low tide. It is desirable, on some accounts, that they be dredged to a depth of not less than thirty-eight feet below extreme low tide at all points. This would provide for vessels of deepest draft when fully loaded. Also it would supply material with which Harbor Island can be raised somewhat and be, at least, helpful in producing streets which would have drainage, the Island at present being practically level.

It would also help toward the filling of the area west of the West Waterway, which is at present largely below low tide.

This brings up a matter of importance to the owners of property on the waterways and to the city at large, and that it, the unsatisfactory conditions relating to the discharge of White River by way of Stuck and Puyallup Rivers to Commencement Bay. At present the flow is into the Stuck and the water may take that direction for years, but unless all the signs fail, it may, during any season of floods, be diverted back to White River.

This question is now awaiting court procedure. In view of all that is at stake it is not only desirable but necessary that the matter should not be allowed to rest indefinitely, but should be taken up at early date by the Port of Seattle and pushed along to some conclusion that will be effectual and lasting for a long term of years.

DUWAMISH WATERWAY

The level ground in the Duwamish Valley, between Spokane Street and Black River Junction, is so located with relation to the center of the city, to the waterfront and to the railways, that it is especially adapted for industrial purposes. One of the greatest obstacles in the way of its development is the winding course of the Duwamish River, which swings from side to side. The straightening of this river, as planned by the Duwamish Waterway Commissioners, will accomplish two things at the same time. (See Map No. 7.) It will permit the laying out of highways for wagon and rail transportation, without interference by the river channel, and will lay the foundation for the creation of a great industrial harbor, at which factories and industries may be located and served by both rail and water facilities. The functions of this waterway will be quite distinct from that of the waterfront proper in the district above described. Generally speaking, it can be most advantageously used for purely industrial purposes. It will become a place where raw materials may be delivered and the finished product taken to and from industrial plants by lighters, barges, tramp coasting steamers, etc. For that reason the bridges across this waterway should be at an elevation giving free passage to small boats, tugs and barges without opening of the draws.

The waterway as planned is satisfactory and has been made the basis of the plans for the further development of the valley. From the south end of the waterway to Orillia, further development would properly take the form of simply straightening the river. (See Map No. 8.) In such case a channel 300 feet wide at the top should be ample. This channel, while not designed for the use of large vessels, might very readily have a depth to allow factories and industries located along its borders to be reached by barges and lighters. The diversion of the Ce-

dar River into Lake Washington will practically dry up the Black River Channel, so that it need not be taken into consideration except that it may be required for drainage purposes. In the vicinity of Black River Junction a settling basin should be provided.

Marginal ways have been laid out on both sides of the waterway at distances therefrom varying from zero feet to 1,200 feet, according to topographical conditions. Wherever possible they have been kept well back in order to provide a strip of land between them and the waterway for industrial uses.

The marginal ways should be of such widths as to carry the necessary highway traffic and to provide for at least three industrial tracks intended for running and switching purposes, from which spurs may be laid into property adjacent to the waterway.

In order to secure uniformity of arrangement, such streets and slips as may be located between the marginal streets should generally be at an angle of forty-five degrees with the axis of the waterway. Suggestions for the frequency and location of slips, other than that of the general direction, are omitted, as it is deemed advisable to leave the property, as far as possible, free for development along lines best suited to the needs of individual concerns to be located thereon. The proposed arrangement is such that enterprises may start in a small way at first and utilize landings along the waterway, but eventually as business warrants, and additional waterfront is needed, slips may be constructed.

The westerly marginal way should be carried through to the vicinity of Orillia on the south and connected with West Spokane Street on the north. The easterly marginal way should extend from Harbor Island to a point in the SE¼ of Sec. 10, T. 23 N., R. 4 E., where, on account of the narrow width of the valley, it should be merged with the arterial highway laid out along the east side of the Duwamish Valley.

The King County property on the east side of the waterway south of First Avenue South bridge, as shown on Map No. 7, now used as a poor farm, would be valuable as an asset of the Port of Seattle, if suitable arrangement can be made for its transfer thereto.

CENTRAL WATERFRONT DISTRICT

That portion of the Harbor Front on the easterly side of Elliott Bay extending from the north end of the East Waterway to Mercer Street, may be aptly designated as the Central Waterfront, because of its location immediately opposite the business center, and on account of the nature of the traffic which it most advantageously serves. It is essentially a city freight and passenger rather than a heavy cargo business to which this district is best suited. Eventually this entire frontage will be none too large for the demands of this class of business.

The piers, landings, etc., should be especially designed to handle the local Puget Sound steamers commonly known as the mosquito fleet, the coastwise and Alaska vessels, ferry boats and both work and pleasure motor boats.

Between Massachusetts Street and Broad Street (see Map No. 9) the waterfront is almost completely occupied, so that, though desirable, the difficulties in the way of rearrangement and its cost would be prohibitive. Some public fa-

cilities, such as fireboat berths, ferry slips, motor-boat landings, gridirons for lighters, etc., are essential, and they should be provided by the City or the Port of Seattle. Especially should the waterfront be made attractive to the independent producers desiring to deliver their commodities to the city by motor-boats. This kind of business, if properly developed, will, in the aggregate, become of great value.

At the foot of Massachusetts Street, near the north end of the East Waterway, is a desirable site for a fireboat berth, together with a gridiron, floats and other landing facilities for lighter, motor-boats, etc. It is a very convenient point at which to make deliveries destined for the wholesale and freight-depot district. (See Plate No. 10.)

The situation about the foot of Madison Street is one requiring some changes. The slip between the Colman and Grand Trunk Pacific Docks would be very satisfactory in width, provided the ferry-slip were abolished. As to the ferry, it is a difficult place for ingress and egress. The Madison Street slip is badly congested, largely on account of the accommodation of the fireboats which here find berth. The resultant crowding is objectionable from the fireboat standpoint, and it obstructs the piers fronting on the slips. The slips between Piers 4 and 5 are also inadequate in width. To relieve the situation, Piers 3 and 4 should be acquired by the city, or Port of Seattle, and in their stead one pier should be erected, which would be designed with ferry-slips and berthing space for boats of the local mosquito fleet. This pier should be of a width such as would leave a slip not less than 180 feet wide at each side. The fireboat station should be removed to some better location, and the present ferry-slip should be abandoned or removed. Floats and landing facilities for motor boats and launches should be located at the old ferry landing and at the shore ends of the slips on each side of the proposed public dock. (See Plate No. 11.)

Just north of the foot of Pike Street is a vacant piece of property which might advantageously be acquired as a site for fire-boat berths, and in connection therewith some small boat landings and lighterage facilities may be provided. In giving this consideration, there has been kept in mind the ultimate accommodation of fire-boats either at the foot of Massachusetts Street or at Railroad Avenue and East Waterway, Pike Street and the vicinity of Harrison Street. The location at the foot of Pike Street has the advantage of being about equi-distant from the two other points.

It is proposed that a boulevard be opened from the Civic Center to the waterfront in the vicinity of Broad Street. At the waterfront end of it there should be constructed a pier of fitting architectural design to serve as a formal water-gate to the city and for recreation purposes.

Between West Harrison Street and West Thomas Street the City now owns some waterfront property. North of West Harrison Street the direction of the piers should be changed and made parallel with Smith's Cove Waterway and the Great Northern Docks, because such an arrangement would make the slips more accessible and permit the construction of piers ranging in length from 1,000 to 2,400 feet. The property between West Harrison Street and the Great Northern Dock belongs to the Great Northern Railway Company, and in order to carry out the proposed re-arrangement it will be necessary to vacate a number of pieces of the existing streets belonging to the city. In return for this the city should require that at least an equivalent area of land be given it

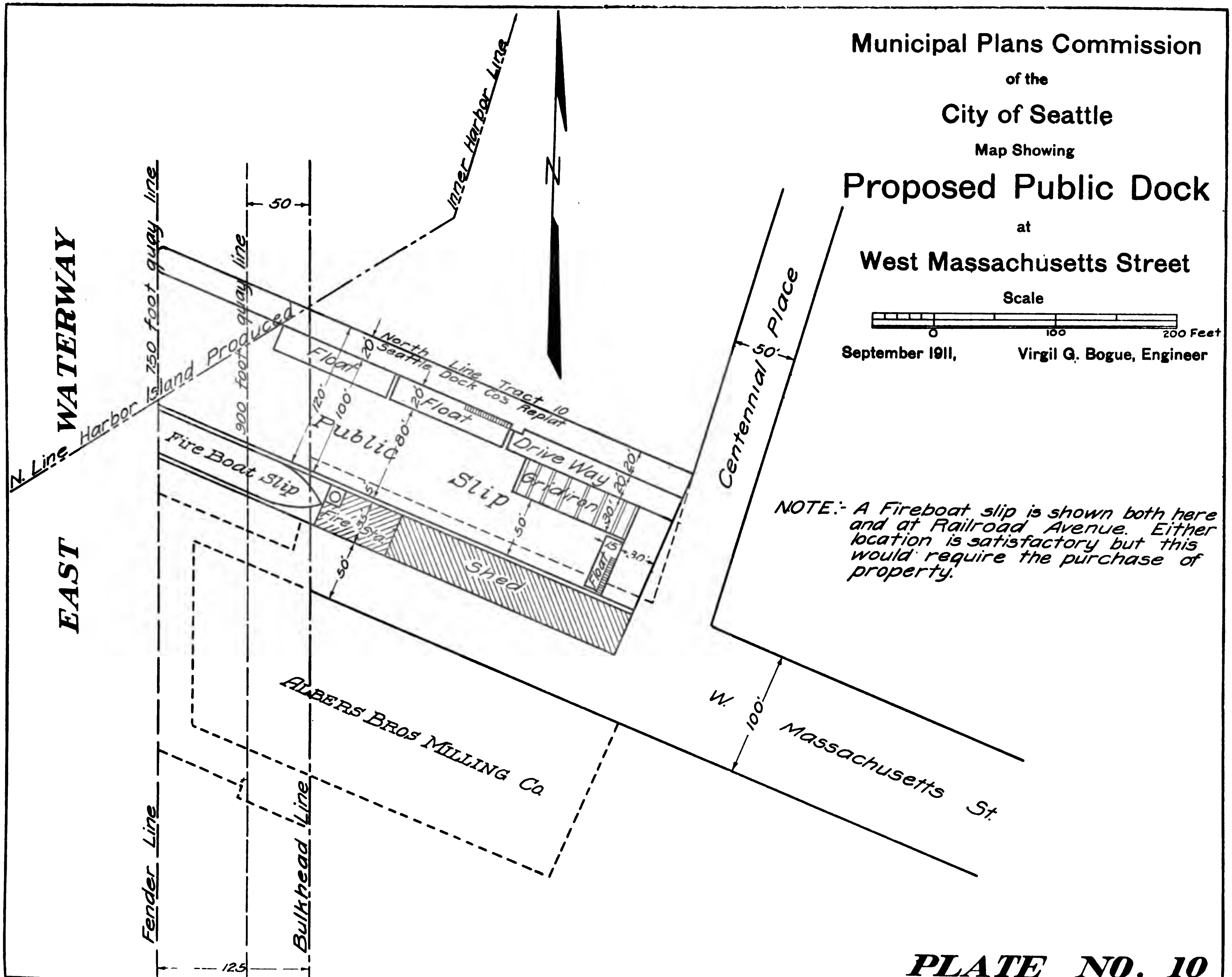
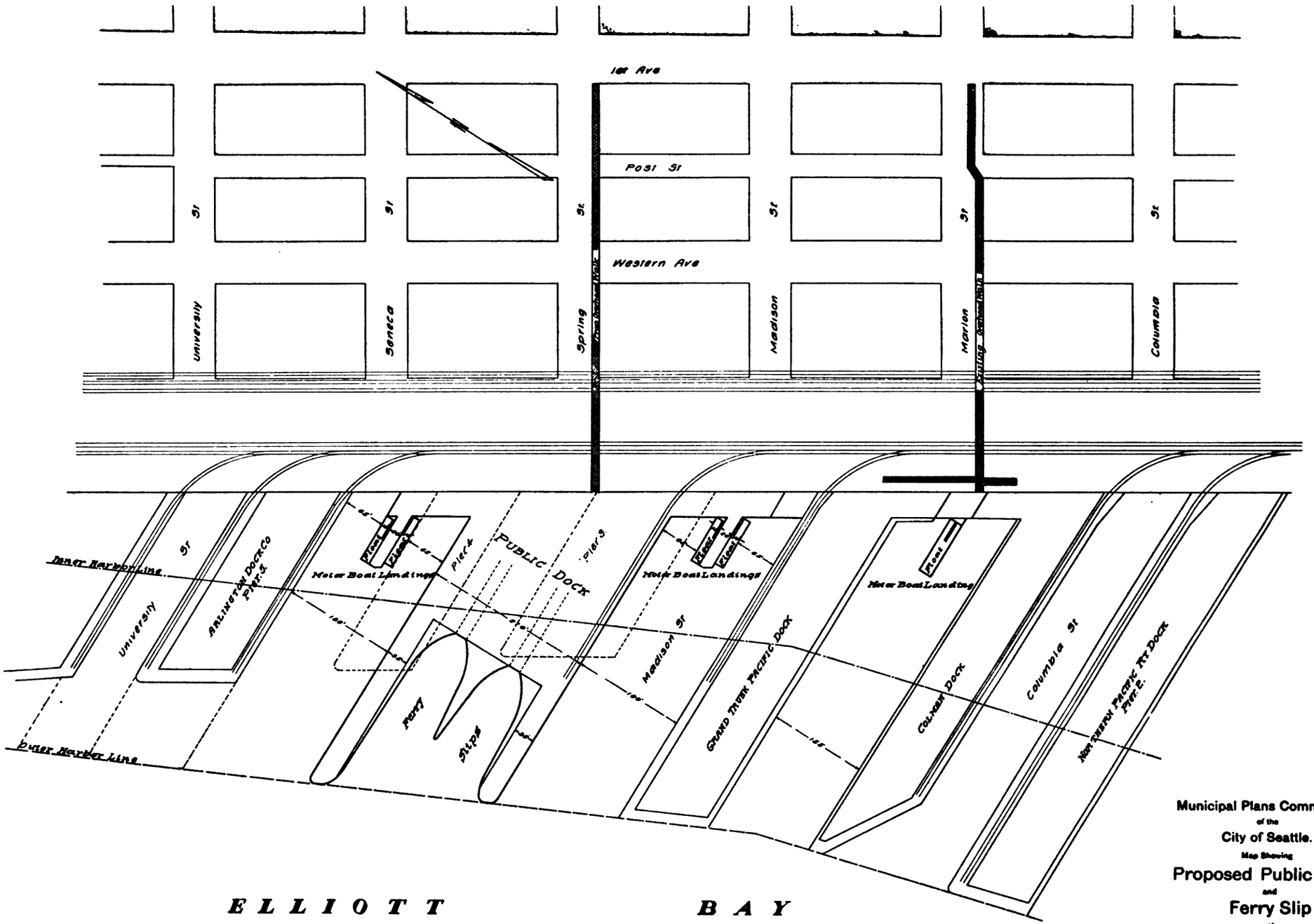
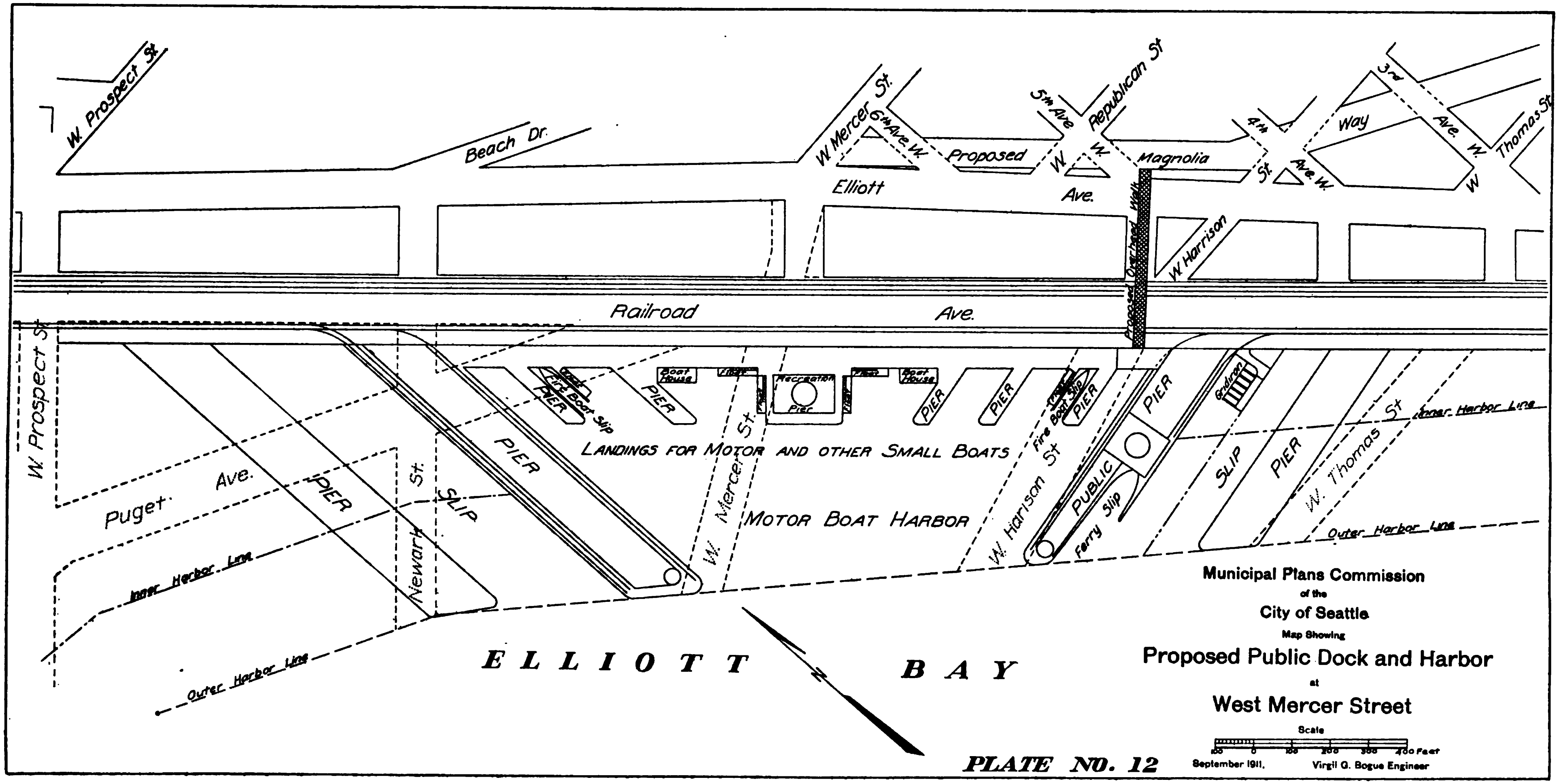

Municipal Plans Commission
of the
City of Seattle
Map Showing
Proposed Public Dock
at
West Massachusetts Street
Scale
0
100
200 Feet
September 1911,
Virgil G. Bogue, Engineer
NOTE:- A Fireboat slip is shown both here and at Railroad Avenue. Either location is satisfactory but this would require the purchase of property.
EAST WATERWAY
Fender Line
750 foot quay line
900 foot quay line
Bulkhead Line
125
50
N. Line Harbor Island Produced
Inner Harbor Line
N
North Line Tract 10 Seattle Dock Cos Replat
Float
Float
Drive Way
Gridiron
Public Slip
Fire Boat Slip
Shed
Float
Fire Sta.
120'
100'
80'
50'
50'
20'
20'
20'
30'
15
30'
Centennial Place
50'
W. Massachusetts St
100'
Albers Bros Milling Co

PLATE NO. 10



Municipal Plans Commission
of the
City of Seattle.
Map Showing
Proposed Public Dock
and
Ferry Slip
at
SPRING STREET
Scale
September 1911. Virgil G. Bogue Engineer.

PLATE NO. 11



Municipal Plans Commission
of the
City of Seattle
Map Showing
Proposed Public Dock and Harbor
at
West Mercer Street

Scale
100 0 100 200 300 400 Feet

September 1911. Virgil G. Bogue Engineer

PLATE NO. 12

just north of West Harrison Street which, in connection with the property already owned, will enable the laying out of a very attractive arrangement for public dock and motor boat landings. (See Plate No. 12.) The proposed extension of Magnolia Way makes this location easily accessible from the Civic Center and business area of the city. West Harrison Street would furnish a connection by a direct route, with reasonably easy grades, to the proposed terminal at the south end of Lake Union. In order to give protection to the smaller boats at the northerly and southerly extremes of this area, solidly filled piers of considerable width ought to be constructed to act as breakwaters. The southerly pier should preferably be designed with a ferry slip, as a ferry terminal will eventually be needed at this location. Within the small harbor between the heads of these two piers should be provided fireboat slips, small docks, floats and landing facilities for motor boats and other small craft, special attention being given to landing facilities for commercial motor boats.

The working motor boat has an almost unlimited field of usefulness in the extensive, protected waters of Puget Sound, British Columbia, and even north into Alaska. Consequently it is going to become a big factor in Seattle's water business, for which contingency ample provision should be made, that this traffic may be attracted here and may be afforded opportunity for business under favorable circumstances.

This motor boat harbor has great possibilities. It may be made one of the most attractive as well as useful gates to the city. In line with this idea, as suggested on the accompanying plan, a recreation pier or pavilion erected as the central architectural feature of the scheme would be desirable.

SMITH'S COVE, WEST POINT DISTRICT

This district is somewhat varied in the functions for which it is naturally well suited. In the vicinity of Smith's Cove there may be developed a Port Terminal rivaling, if not exceeding, the Harbor Island district, in desirability as a terminal for cargo vessels. West of Smith's Cove, both commercial and industrial development will probably take place, the industrial feature predominating. (See Maps Nos. 9 and 10.)

Smith's Cove Waterway, as shown on the plate of the Seattle Tidelands, is four hundred feet in width and over five thousand feet in length. It should be made one hundred feet wider, as four hundred feet is hardly sufficient for a waterway of that length. A clear width of not less than five hundred feet should be maintained, which precludes encroaching on the waterway with bulkhead or dock structures.

Two waterways about two thousand four hundred feet long may be constructed, one on each side of Smith's Cove Waterway. The easterly one should be approximately two hundred fifty feet wide, and the westerly one three hundred fifty feet wide, in the clear. Between each of these waterways and Smith's Cove Waterway, solid filled piers may be constructed which should be approximately four hundred feet in width between fender lines. Between the Westerly Waterway and Thirtieth Avenue Northwest, three slips from one thousand to one thousand four hundred feet in length may be constructed. A width of approximately five hundred feet between slips would permit the making of desirable areas for industrial concerns requiring waterfront locations.

Joliet Avenue, West Lee Street and Logan Avenue should be widened to

not less than one hundred fifty feet, thus making a continuous marginal way from the railway yards at Interbay to West Point. Along this street the industrial tracks should be located. These tracks should be extended on north of West Point to Salmon Bay and around to a connection with the north end of the Interbay yards, thereby forming an industrial belt line. In accordance with this plan Puget Avenue should be vacated, leaving the property to develop from the bluff outward. The advantage of this method is that enterprises can make a start on a small initial investment by constructing temporary wharves, leaving the more expensive filling and slip construction to be done as the business warrants. Between Thirty-second Avenue West and West Ray Street produced, the existing streets running from the waterfront out should be changed to an easterly and westerly direction, making an angle of approximately forty-five degrees with the marginal way. These streets will give the proper direction to such slips and piers as may be constructed.

Opposite Wolf Creek Gulch, in the vicinity of Thirty-second Avenue West, a public landing place should be located. Ferry service from this point should be provided at some future day. The easy grade which may be obtained to the top of the hill, along Wolf Creek, will make of this a desirable place for the delivery by water of coal, building material, etc., consequently landing facilities for lighters, motor boats, etc., should be provided.

A little easterly of what is commonly known as Four Mile Rock, in the vicinity of Fortieth Avenue West, produced south, is an excellent location for a large coal dock and bunkers. All outbound vessels pass close to this point, making it very convenient for coaling purposes. For the same reason it would be a good location for a powder dock at which the shipping of powder by water might be concentrated. For convenience the coaling and powder docks should be near to each other.

The suggestion relating to a coal dock is of much importance. The statement is made by a reliable firm that 564,000 tons of bunker coal from Seattle and Tacoma, and 450,000 tons from Nanaimo, Ladysmith and Union, Vancouver Island, are annually supplied steamers, the price at bunker tips being $3.60 at Seattle and Tacoma and $4.00 at the other points named, per long ton.

A fair estimate of the amount annually required, at least within a few years after the Panama Canal is completed, is two million tons. It is worth a great effort to secure the bulk of this business for Seattle. It is, in fact, a matter of vital importance to Seattle to have large bunkers on the waterfront where coal of superior quality can always be had in large quantities, so that steamers can get their supply without the delay of going to other ports. Seattle will thus become the coal port of the Northwest.

This is an additional reason why Seattle should take deep interest in the opening of the Alaska coal mines in the hope that coal therefrom will be of such good quality as to command ready sale for steamer use, even if the price, for a few years, is comparatively high. Coal can be towed from Alaska in coal barges by steamers, especially those engaged in ore traffic.

The coal docks which may be established at Seattle should, of course, be supplied with suitable coal handling devices.

Between West Ray Street and West Point the water shoals out such a distance that there is formed a tideland area of approximately four hundred acres. Between Pickering Avenue and Puget Avenue a waterway, to be known as

West Point Waterway, should be opened up, extending from the outer harbor line near C Street northward to H Street. This waterway should have a width between fender lines of not less than five hundred feet. A solid filled pier should be constructed between the waterway and the inner harbor line, as shown on the plat of the Seattle Tidelands. This pier, which will ultimately be approximately four hundred feet in width, will serve as a breakwater to protect the waterway from the southwesterly winds. Such use would, however, in nowise detract from the exercise of other functions.

Adjacent to the waterway and on the pier westerly of it the land should properly be given over to the warehouses and cargo handling facilities. Between Logan Avenue and the waterway, a replat should be made along the same general line recommended for Harbor Island. Between Logan Avenue and the foot of the bluff the existing plat will answer very well for larger industrial purposes, provided alleys wide enough for three industrial tracks are opened lengthwise through the middle of the block, as suggested on Map No. 10.

West Point Spit and the tidelands between it and West Point Avenue will make an admirable location for the United States Immigration Station. A slip and other facilities for immigration and revenue service vessels can readily be provided. The riprap sea wall construction recommended for Harbor Island will be adequate at the Smith's Cove Waterway and at the proposed West Point Waterway; heavier riprap, however, may be demanded on the outside of the West Point Pier and at other points exposed to the southwest winds.

At the time of the establishment of Fort Lawton, the United States Government acquired the tidelands in front of the military reserve. Only a limited area thereof is adapted to government uses, but it is of such value for harbor purposes that Congress should be persuaded to turn over that portion south of West Point Avenue to the city or Port of Seattle, and to appropriate funds to aid in the construction of West Point Waterway and Pier.

At a number of European cities free ports, where goods may be stored or manufactured in bond, duty free, have been successfully developed. Some of the larger cities of our Atlantic Coast are considering asking Congress to authorize the establishment of such free port districts. In case it becomes desirable to form a free port district in Seattle, a logical location for it is on the tideland area between West Point and West Ray Street, produced. Whether a free port or otherwise, a magnificent harbor terminal can be constructed in this location with apparently little difficulty.

BALLARD DISTRICT

This district may be more readily considered by dividing it into two sections, namely, the Outer and Inner Harbor. The Outer Harbor is well suited for industrial and commercial enterprises requiring considerable areas of waterfront and plenty of room for future growth, that they may be developed as suits their peculiar needs.

There is a quite extensive tideland area in Shilshole Bay that may be developed. The channel leading from Shilshole Bay to Salmon Bay, when improved, may also be made into an attractive commercial waterway, approximately 3,000 feet in length. The bulkhead landing along this waterway, or entrance to Lake Washington Canal, should be set back a hundred feet or more to prevent vessels lying alongside from encroaching on the fairway of

the channel. Two piers, approximately 500 feet in width, may be constructed, one on the south and the other on the north side of this entrance channel. These piers should eventually be filled in, thus making this channel a safe anchorage basin for small boats.

A waterway not less than 300 feet in width should be constructed on the north side of the northerly pier, and a similar waterway on the south side of the southerly pier. Delaware Avenue and Semple Place should be widened to not less than one hundred fifty feet and connected via West Point Avenue with the marginal way south of West Point. Thus widened these streets will become a part of the marginal way and on it may be laid the tracks of an industrial belt line.

Puget Avenue should be vacated, leaving the property free to develop from the shore outward, except that the direction of the slips should be fixed by relocating the cross streets at the proper angle with the marginal way, as shown on Map No. 11.

From the entrance channel northward to the northerly limits of the State Tideland Plat, a similar arrangement may be followed. Puget Avenue should be vacated and a new marginal way not less than one hundred fifty feet in width, approximately pralleling the Great Northern right-of-way, opened up, as shown on Map No. 11.

The cross streets fixing the direction of the slips should be made parallel with the entrance channel. From Meadow Point northerly to the King County line, the bluffs are so precipitous and the tideland strip is so narrow that extensive development is not probable. On account of insufficient data no attempt has been made to suggest any plan for its improvement.

The Inner Harbor, or Salmon Bay, upon the completion of the government lock, should make a fine non-tidal basin. Being in the center of an extensive area of land suitable for industrial and business purposes, its natural development will be as a depot for the assembling of raw material and the shipment of products from the factory. The facilities should be designed accordingly.

The south shore should be treated as a bulkhead landing, except between Fifteenth and Twentieth Avenues West, where two good slips may be constructed.

On the north shore, Shilshole Avenue, between Fourteenth Avenue and Twenty-fourth Avenue Northwest, should be widened not less than fifty feet on the water side in order to render it satisfactory as a marginal way. From Twenty-fourth Avenue Northwest, Shilshole Avenue should be extended along the waterfront side of the Great Northern right-of-way, westerly to a connection with the marginal way on the Outer Harbor.

The northerly side of Salmon Bay, between Ninth and Twenty-eighth Avenues Northwest, may be broken up into slips and piers as the changing requirements of the district demand. The city already possesses a public landing at the foot of Twenty-fourth Avenue Northwest, which should be enlarged into a small harbor for working motor boats, lighters and other small craft.

The land lying between Leary Avenue and the waterfront is so situated in regard to the harbor, the railroads, and important city highways, that extensive development will be justified. This will require rather close adherence to

a general plan, and a careful working out of details if the possibilities of the district are to be taken full advantage of.

Between Leary Avenue and the Northern Pacific right-of-way, from Kilbourne Street to Ninth Avenue Northwest, the property should be replatted, as shown on Map No. 11.

Adjacent to the southwesterly side of the Northern Pacific right-of-way, between Kilbourne Street and West Forty-fifth Street and produced northwesterly to West Forty-seventh Street, a new street, in the nature of a marginal way, should be opened up in order to properly develop the district between it and the waterfront. This new street should be not less than sixty feet wide. The fact that most of the blocks in this district are only 200 feet in depth may preclude the general adoption of the center block location of spur tracks, in which case industry tracks should be located on every alternate street, as indicated on Map No. 11.

Between Commodore Way and the Great Northern right-of-way, on the south side of Salmon Bay from Twentieth Avenue West to Thirtieth Avenue West, is a district that may be made available for industrial purposes. The railway spurs may be located in the centers of the blocks, as shown on Map No. 11.

Commodore Way should be extended westward from Thirty-fourth Avenue West, following the shore line to a connection with Semple Street, as shown on Map No. 11.

The space at the ends of bridges, where available, should be used for landings for small boats. This suggestion holds good wherever bridges are constructed across waterways.

LAKE UNION DISTRICT

The completion of the Lake Washington Canal will make of Lake Union a non-tidal basin accessible from Lake Washington through an open channel, and from Puget Sound via a single lock and Salmon Bay. The fact that it is located in the very heart of the city indicates that if properly developed it will become a most important factor in the commercial and business activities of the city. Just what functions it will discharge should be well understood before determining on a plan for its improvement.

The influences controlling the uses to which the Lake Union waterfront will be put are two-fold. First: Those arising from conditions at and in the vicinity of the Lake Union basin. Second: Those emanating from a radius of country depending upon Lake Union as a water gate to the center of the city.

The local conditions are both topographical and artificial, but fundamentally topographical. Between the south end of the lake and Elliott Bay is the one large area of land which is level or capable of being made near enough level for business purposes of a high class. Within this area is the great centeral business section of the city, all of it accessible to the south end of the lake by comparatively easy gradients. The hills flanking both sides of Lake Union are a barrier to east and west traffic, so that a large proportion of the transportation lines must pass along the level margin on either side of the lake. At the north shore of the lake a considerable business or industrial area is certain to develop. From it streets with comparatively easy grades lead to the large territory lying northward.

The principal artificial influences which, however, are based largely on topographical conditions, are: The location of the proposed Union Passenger Station, at the southwesterly end of the lake, and two important arterial highways, one on either side, that on the west side, "Central Avenue," being the axial highway of the city. All these things work together to make of the Lake Union basin an ideal water terminal for transfer of commodities to and from central portions of the city.

The outside or contributing forces which will have to do with the determination of the functions that the Lake Union basin will be required to fulfill, are those emanating from more or less distant places naturally or artificially tributary to the city via water transportation. These influences can come from two sources, first: From Puget Sound and the sea; second: From the country adjacent to Lakes Washington, Sammamish, and the waterway which will eventually connect them. Of the two influences, the latter will undoubtedly be the more important. The Puget Sound mosquito fleet will not take the time to pass through the lock and the narrow channel into Lake Union; neither will sea-going vessels, unless the most of their cargo is consigned for delivery at some point on the lake. The bulk of the business seeking Lake Union from the Sound, will, undoubtedly, be delivered by lighters carrying freight consigned from large cargo steamers to warehouses or industries around the lake, by barges and motor boats carrying coal, building material, etc., brought from various points about Puget Sound, and by smaller freight steamers and larger ones in case most of their cargo is to be discharged in the lake basin. On the other hand, the mosquito fleet of the lakes will undoubtedly seek the south end of Lake Union as a terminal point. A part of the lake ferry service will also extend into Lake Union.

There are a number of rich valleys and fine farming districts close to Lake Washington and Lake Sammamish, the products of which can be cheaply delivered to the city by water transportation; as also coal from the numerous mines in the vicinity of the lakes. A return movement of package freight and other commodities to be delivered from the business houses of the city to the large territory tributary to the lakes will naturally take place.

The reduction of cartage costs within a city is one of the most important things to be considered in city planning, and the degree of success achieved in solving the problem may have a great deal to do with the ultimate commercial success of the city. The possibilities of what may be termed water cartage about Seattle are interesting. Especially is this applicable to the districts bordering on the non-tidal basins inside the proposed lock at the mouth of Salmon Bay. In this connection it may be well to bear in mind that the total water frontage of the three lakes and the channels uniting them will be about 134 miles. A considerable part of this frontage will, beyond doubt, be developed for industrial purposes, but much the larger proportion of it is most attractive for residential purposes, and is destined to eventually accommodate a great population. This gives an idea of the enormous traffic which may be expected to develop ultimately on the lakes.

The motor boat, as well as the automobile, is an ever-increasing factor of transportation, and is destined to exert a far-reaching influence in distributing the population of our cities over suburban areas. About the shores of Lakes Washington and Sammamish are as beautiful locations for suburban resi-

dences as any in the world, and in time these places will be utilized, not only by the wealthier citizens of Seattle for residential purposes, but by people from other parts of the state and of the United States as sites for summer homes and permanent residences. They will, to a great degree, have their own means of transportation; that is, automobiles, motor stages and fast motor boats used as private ferries. While some of these boats will seek connection with the city transportation systems at various points along the west shores of Lake Washington, a large number of them will desire to land in the business center of the city by going to the south end of Lake Union. As a consequence, a motor boat terminal of large proportions will be necessary in order to properly take care of this business. All these things are cited as an index to the nature of the traffic and as reasons for the recommended treatment of the Lake Union Waterfront.

The Lake Union Waterfront and railway problems are so closely interwoven that a consideration of one necessarily includes that of the other. Especially is this true of the south end of the lake where it is proposed to locate the Central Passenger Station. Between Westlake and Central Avenues, from Harrison Street to Halladay Street, there is a section which is now to some extent unsatisfactory for business purposes, which can be made into an advantageous site for a great union passenger station. The use of this latter location has several points of desirability, not the least of which is that it does not absorb property of great economic value to the city.

The necessary yard room, including sufficient area for future growth, may be acquired by excavation, supplemented by filling a portion of the west side of the lake.

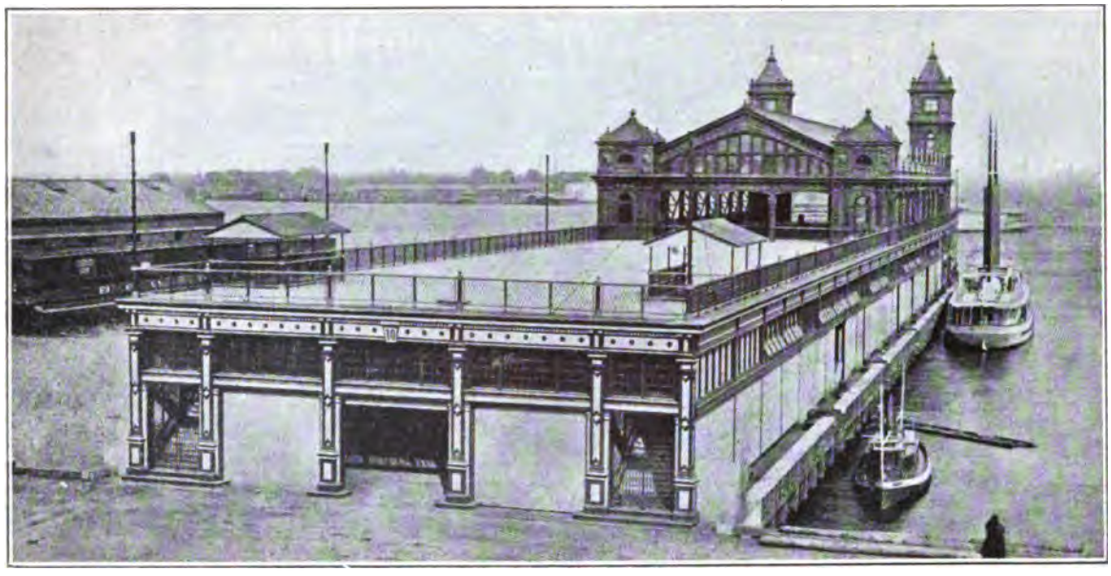
This work will come along in connection with the building of the terminal, without interfering with present uses of the lake front or those contemplated in the near future, or of the Nrothern Pacific Lake Union line now under construction.

When this improvement is accomplished, Westlake Avenue will have to be relocated to the eastward so that the portion between Roy Street and Howe Street will be approximately in line with the avenue as it exists south of Roy Street. The new street should not be less than 150 feet in width.

The opening of two new north and south arterial highways west of the station grounds will leave Westlake Avenue free for use as a marginal way. To the westward the marginal way will connect via Nickerson Avenue with Seventeenth Avenue West, thence south by way of Seventeenth Avenue West, through Interbay to Railroad Avenue, the marginal street of the "Central Waterfront District."

Under this plan the marginal way should skirt the south end of Lake Union, passing a little south of the intersection of Ward Street and Fairview Avenue produced, to a connection with a new east side marginal way.

This new street from Minor Avenue northeasterly to the vicinity of Waterway No. 8 will follow, approximately, Fairview Avenue, as located on the Lake Union shore land plat; thence it will curve to the northward into a line parallel with Howard Avenue, produced south. Between Waterway No. 8, as shown on the Lake Union shore land plat, and Howe Street, the west line of the east marginal way should be approximately 460 feet easterly of the existing harbor line. From Howe Street northward, the existing street should be utilized.



Recreation Pier, Philadelphia

Recreation Pier, Philadelphia

Recreation Pier, Hull, England

Waterfront, Antwerp

The east side marginal way should be not less than 150 feet wide south of Newton Street, and not less than 130 feet wide between Newton Street and Louisa Street, produced west. The Lake Union belt line tracks should eventually be relocated on the new marginal ways. Just east of Fremont Avenue, as shown on Map No. 12, a connection should be made between the belt line and the freight tracks that will run through the proposed yard of the Central Station and connect by tunnel with the railway yards on the tide flats.

On the south side of the canal right-of-way, between Fremont Avenue and Seventeenth Avenue West there are desirable locations for a classification yard and for coach storage and cleaning facilities. The Lake Union belt line will connect with these yards, from which the business about Lake Union can be conveniently served, and at which freight trains will be received and broken up for distribution about the city, or made up for dispatch to other points.

The west side of Westlake Avenue will be kept entirely free from grade crossings and be available for street railways and other street traffic.

The property north of Harrison Street, between Fairview Avenue and Ninth Avenue North, under this scheme, will be readily accessible to railway tracks. Here stores, lofts and warehouses may be provided, but principally local freight facilities. The tracks serving the district should be located back of the buildings in the center of the blocks, leaving the north and south streets clear.

So valuable will this district become for the purposes mentioned that eventually "Class A" buildings of pleasing architecture will probably predominate.

The property between the new east marginal way and Eastlake Avenue from Almy Street to Roanoke Street should be rearranged and made available for local storage yards, warehouses, lofts and other facilities necessary to properly balance the possible dock frontage on the east side of the lake.

On the east side of the lake, between Almy Street and Newton Street, there is a good opportunity for slip and pier development between the marginal way and the existing harbor line. From Newton Street northerly, bulkhead warehouses, in accordance with the shore land platting, may be constructed except just north of Waterway No. 10, shown on the shore land plat, where a public landing should be provided. This public place should be equipped with facilities for lighters, motor boats, etc., as it is a convenient point from which deliveries may be made to the district east of the lake. This would also be a good location for a fireboat station to reach all points on Lake Union.

The south end of Lake Union should become one of the principal water gates of the city. Here will be located the piers and slips for lake passenger and ferry boats, also landings for the great number of motor boats which are destined to ply the lakes as private ferries or in recreation and business service.

The most advantageous location for the ferry and lake boat landings is opposite Waterway No. 2, as now platted, on account of it being close to the Central Station and accessible to the street railway system of the city.

In front of the ferry and lake boat terminal, the marginal way should be widened to form a plaza approximately 300 feet in width. This will be necessary in order to take care of the transfer business between street railway and water transportation lines without undue congestion.

Immediately south of the lake boat terminal and around the south end of the lake a circular motor boat harbor should be laid out. It should be equipped with landings and beautified in such manner as befits a formal entrance to the city, and should be the property of the Port of Seattle. The bounds of this harbor might well be adorned by recreation piers of monumental design.

In connection with the lake steamer, ferry and motor boat terminals, it is important that facilities for landing heavy commodities, such as building material, coal, etc., be provided as near the business district as practicable. The most suitable places are in the vicinity of Waterway No. 7, as shown on the Lake Union shore land plat, and just north of the proposed ferry slips. On the west side of the lake northward from the lake boat and ferry landing, the harbor line should be set out approximately 130 to 150 feet from the marginal way in order to permit of bulkhead warehouse development, as shown on Map No. 12.

The frontage on the north side of Lake Union, between the foot of Wallingford Avenue and Fremont Avenue, while limited in size, is of great importance as a delivery point by water, of coal, building materials, and other commodities destined for distribution in the large area north of Lake Union. This location is especially desirable as it may be made accessible to "Central Avenue," the main arterial highway running northward to the Snohomish County line. South of the Northern Pacific right of way, a local marginal way should be provided with approaches leading to "Central Avenue" and Fremont Avenue bridges. On account of the axial line of the canal being well over to the south side of the lake opposite this location, it will be feasible to extend the pierhead line far enough out to permit of the construction of slips 500 feet long.

The waterfront between Wallingford Avenue and "Central Avenue" is well located for public landings devoted to the use of lake steamers, lighters, motor boats, etc., while to the west of "Central Avenue" the location is better suited for traffic coming from Puget Sound.

From Wallingford Avenue, easterly, the north shore waterfront is satisfactory as platted. In the vicinty of Sixth Avenue Northeast, landings should be provided for small boats, lighters, etc., also such facilities may be advantageously located at the foot of Brooklyn Avenue, a convenient point for serving the University district.

The north side of Lake Union between Fremont and Latona is well adapted to industrial enterprises that do not require great areas of level land. Here they will find both rail and waterfront accommodation with convenient access to homes on the ample slopes beyond. One or more business streets paralleling, in a general way, the lake shore and back of the industrial section will ultimately be devoted to retail business necessary to the supply of the people of that neighborhood.

The plans for the north lake front are somewhat modified by the likelihood of a number of the railways coming from the north, seeking an entrance to the Central Station over a bridge crossing the lake from the vicinity of Interlake Avenue on the north to the vicinity of Halladay Street on the southerly side.

This line would cut through the point between Densmore and Bagley Avenues. In connection with it, the Northern Pacific line should be straightened out and the track around the point should be used as a switching stub.

At the north end of the railway bridge a "Y" should be constructed con-

necting with tracks running westerly through Fremont and Ballard, and at the south end of the bridge a "Y" should be constructed making connections with Central Station tracks to the south and with the coach and classification yards to the west.

Between Ewing Street and Fifteenth Avenue Northeast, Northlake Avenue should be widened and straightened as needs be to make it a marginal way. On it would be located the industrial tracks serving the waterfront. Between Bagley Avenue and First Avenue Northeast, there is space for additional tracks for switching purposes, and in the vicinity of Tenth Avenue Northeast local team tracks and freight houses should be provided.

LAKE WASHINGTON

Before entering upon a discussion of the development suited to Lake Washington, a general survey of the situation should be taken. Assuming that Lake Washington and Lake Sammamish will eventually be connected by a channel large enough to accommodate barges and small lake steamers, the two lakes may be considered as one, with a total shore of approximately one hundred and twenty-five miles. As previously explained the major part of the lake frontage is especially attractive for home sites, while at certain locations scattered about, are places peculiarly favorable for industrial uses. A fortunate feature of the matter is, that the residential areas are not all adapted to commercial purposes, while on the other hand, the flat districts suitable for commercial or industrial development are wholly undesirable as residential property.

The matter resolves itself into the problem of the best way to treat the different classes of waterfront, each according to its functions.

The residential lake frontage calls for very little general planning except at points where landing places are desirable. Such places are partly a highway study and partly a problem of the arrangement of ferry, lake-steamer and motor boat landings, to fit the local conditions.

A consideration affecting the plans for the lake front is the feasibility and necessity of a boulevard system encircling the lake. In some places this boulevard will follow the lake shore; in other places it will be somewhat inland; along some portions it will be parked and in others it must run through business and industrial sections.

This boulevard, which should be so planned as to provide not only for boulevard purposes, but also for highway uses, should be not less than one hundred sixty feet wide, except where it runs through business sections. In such instances the streets occupied should be of the widths suggested in connection with the waterfront and arterial highway plans.

An important factor, of general application, is the attractiveness of Lake Washington as a winter haven and storage harbor for vessels of all classes, especially for yachts and motor boats. It is pretty generally believed that Puget Sound is destined to be the leading yacht and motor boat center of the world. Assuming the reliability of this prediction, it follows that the advantage thereby ensuing to the Lake Washington region cannot be overstated.

The bays and coves will become anchoring grounds for pleasure craft, because of their quiet waters and their nearness, in many cases, to the owners' residences. At such places as are suitable, numerous industries catering to

the motor boat and pleasure craft business, will spring up. The fact that the lake is non-tidal will be an important advantage to such enterprises.

Taking a general look at the situation, the places on the lake best adapted to industrial development are: the Renton District, May Creek, Mercer Slough, Kirkland, Juanita Bay, Sand Point, Madison Park, (for a certain character of business), and between Rainier Beach and Dunlap. While not within the limits of our studies, there are other industrial locations at the north end of the lake, on the flats in the Sammamish Valley and at the head of Lake Sammamish.

LAKE WASHINGTON—WEST SIDE DISTRICT

Between Pontiac and the north end of the lake the country rises so abruptly from the shore that there is not much room for marginal development.

At Sand Point, in the vicinity of Pontiac, in close proximity to the Northern Pacific Railway, there are approximately 300 acres of level land admirably situated for industrial purposes. The suggested platting of this area, as shown on Map No. 14, would give a convenient and economical industrial arrangement. The proposed arterial highway should be made one hundred fifty feet wide along the portions to be occupied by switching tracks leading to the industry spurs.

Near southeast shore of Sand Point is Mud Lake, a shallow body of water which can be utilized in the making of a waterway. Mud Lake Waterway would properly connect with the lake near the south line of Sec. 2, T. 25, N. R. 4 E. and run in a northwesterly direction. A waterway 2,600 feet long can readily be obtained. It should be not less than 400 feet wide, the material dredged therefrom to be used in filling the flat.

The most economical use of the property would be gained by laying out the east and west streets and industry spur tracks parallel with this proposed waterway. The northerly of these streets, which would properly be located from six to twelve hundred feet back from the outer harbor line along the north side of Sand Point flats, would become the local marginal way to that portion of the district. For such marginal purposes this street should preferably be 150 feet wide. The waterfront can be developed from the shore outward, and as need arises, piers and slips may be constructed. These, however, should be uniform as to direction. They should run northeast from the marginal way, making an angle of approximately 45°.

On the east side of Sand Point flat, the waterfront, in case the suggested platting is adopted, will naturally be developed from the shore outward, any piers and slips which may be constructed taking the same direction as that of the Mud Lake Waterway. (See Map No. 14.)

The extreme end of Sand Point is very desirable for a lake front, park and bathing beach, so much so that about twenty acres should be reserved for this purpose.

The industry tracks of this district can readily be connected with the existing Northern Pacific Railway line a little north of Pontiac Bay.

Between Sand Point Flats and Union Bay, the waterfront is best suited for residential purposes. On the south side of Union Bay and in the vicinity of Madison Park, is a low lying area where there is room for a considerable commercial development in connection with the waterfront. (See Map No. 13.)

LAKE WASHINGTON

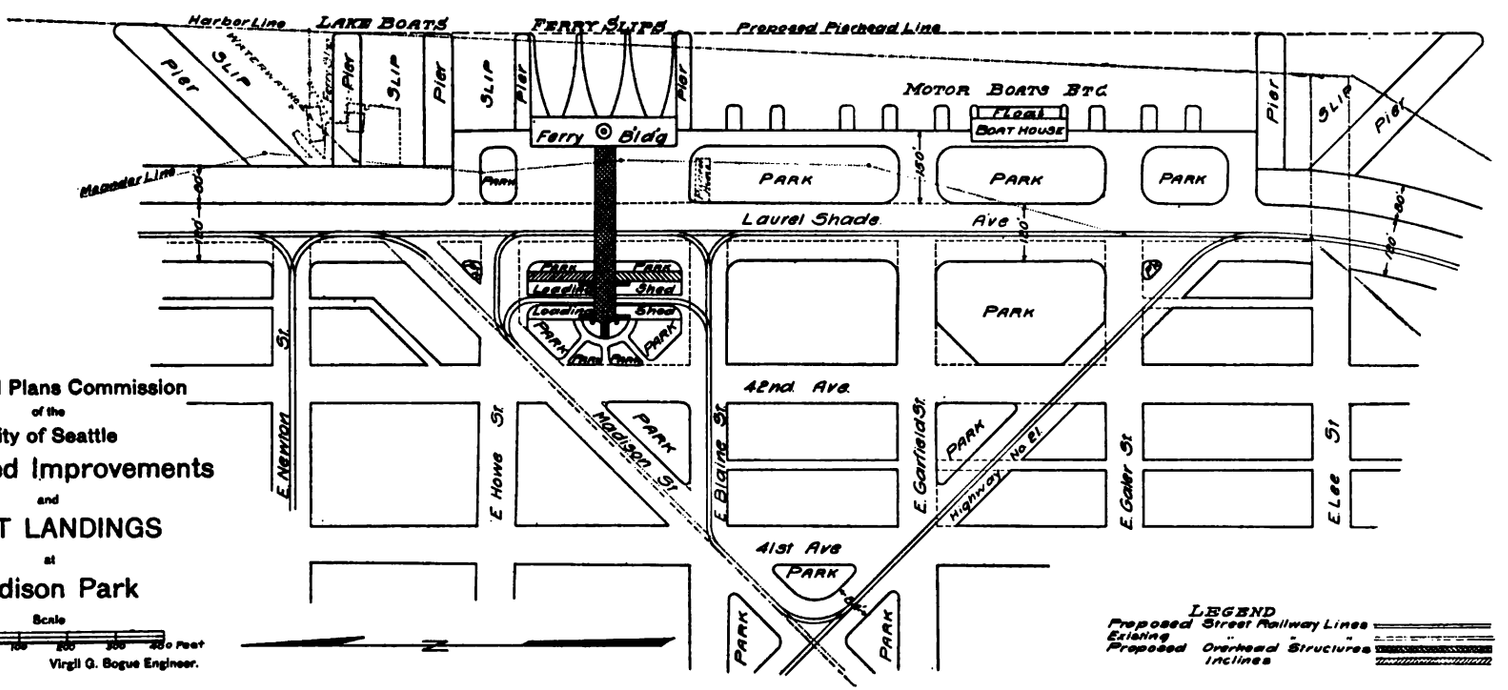
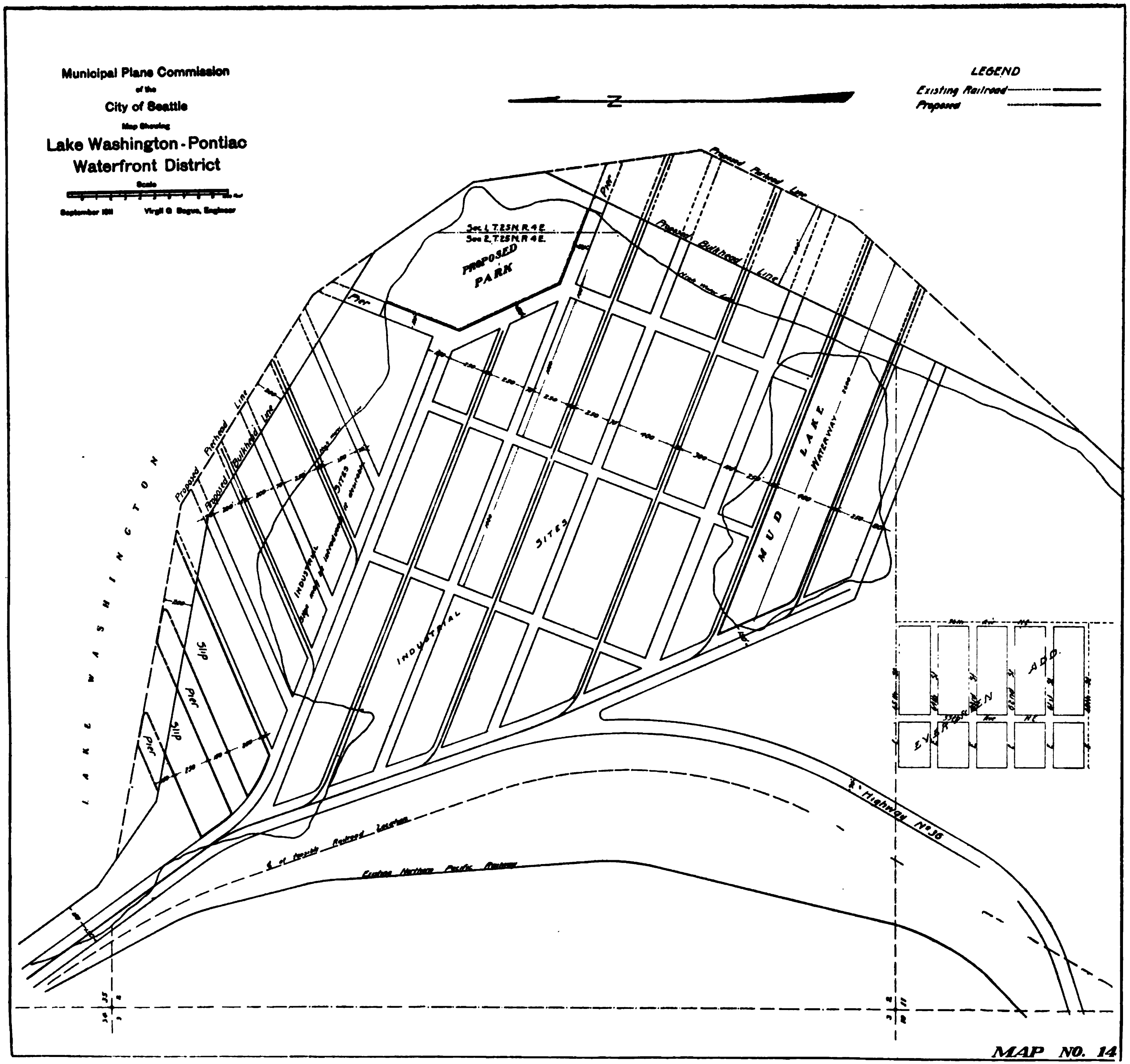


PLATE NO. 13


Municipal Plans Commission
of the
City of Seattle
Map Showing
Lake Washington - Pontiac
Waterfront District
Scale
September 1911
Virgil G. Bogue, Engineer
LEGEND
Existing Railroad
Proposed
N
Proposed Pierhead Line
Proposed Bulkhead Line
Pier
Sec. 1, T. 25 N. R. 4 E.
Sec. 2, T. 25 N. R. 4 E.
PROPOSED PARK
MUD LAKE
WATERWAY
INDUSTRIAL SITES
Slip
Pier
LAKE WASHINGTON
Highway No. 16
Northern Pacific Railway
ADD.
MAP NO. 14

Madison Park (see Plate No. 13) is now an important watergate of the city, and is destined to become one of its great features. The facilities especially required will be ferry-boat landings, piers for lake steamers, and yacht and motor boat accommodations. The block of land now occupied by the Madison Park pavilion is well suited to make the central feature of the water terminal scheme. A very pleasing arrangement may be obtained by using the east and west line through the center of this block as an axis. The ultimate ferry landings should be centered on this axis. To the south of the ferry house can be worked out a fine yacht and motor boat terminal, and to the north, lake steamer and commercial facilities will predominate.

Between East Lee Street and East Newton Street, Laurel Shade Avenue should be made not less than 120 feet wide in order to properly serve as a marginal way. West of Laurel Shade Avenue are good opportunities for street car loops and terminals; all of which predestines this to be an important transfer point between water and land transportation and one which should be ornamented by parking and architectural features.

The Washington Pioneers Association Home, located at the foot of Blaine Street, should be considered in any parking plans to be worked out and, if practicable, be made an important feature of the scheme.

The steep slopes which prevail along the west side of Lake Washington, between Madison Park and Rainier Beach, afford small opportunity for industrial development, but are scenic and attractive as home sites. Consequently, this waterfront has been considered from a residential standpoint. From Madison Park to Rainier Beach a combination highway and Park Boulevard should follow the lake front, except at a few points where it is advantageous to turn inland a little. At points such as Madison Park, Leschi Park, the foot of Day Street, the cove at Forty-fourth Avenue South and Charlestown Street, and others that may develop where transportation connections may be had to the business district, lake boat and ferry landings will be required.

At the foot of Day Street there will probably develop a very important terminal.

By an eighteen hundred foot tunnel on Day Street and connection with Dearborn Street, a highway is proposed between the lake and the business center, with a maximum grade of three per cent. When this is realized, the Day Street terminal will be the natural landing point for ferries and boats plying to the middle and southerly portions of the east side of the lake. It will be an especially convenient terminal for traffic coming from Mercer Island points. At this location a very attractive watergate to the city may be developed, making the ferry buildings and slips the central feature of a symmetrical scheme for lake steamer and motor boat landings. (See Plate No. 14.)

The small cove in the vicinity of Charlestown Street and Forty-fourth Avenue South might be converted into a waterway. The water is shallow in the cove so that the earth obtained from dredging the waterway would make good land on either side.

The proposed lake margin boulevard, which runs east and west along Charlestown Street, between Forty-third and Forty-seventh Avenues South, would fix the southerly limit of the waterway. The center line of Forty-fourth Avenue South, produced north, might advantageously be taken as the axis of the waterway which should be not less than three hundred feet wide.

The importance of this location arises from the fact that south of the proposed waterway is a valley which in the vicinity of Genessee Street swings westward to a connection with Rainier Valley, making it possible to reach the Rainier Valley district by easy grades.

The proposed waterway would thus become an economical landing place for the delivery of coal, building material and other commodities.

The flat country between Rainier Beach and Dunlap is of sufficient area and so situated that it is rather attractive for business and industrial purposes.

The fact that the arterial highway located in the Rainier Valley will converge in this vicinity with the marginal boulevard along the lake, and that in Dunlap Canyon a short, low grade connection may be had with the Duwamish Valley, is sufficient basis for predicting a local waterfront development in this location of considerable importance.

Railway connections may be readily had via Renton or Dunlap Canyon. Between the south end of Pritchard's Island and Rainier Avenue the water is shallow, permitting the construction of slips of considerable length. From the south end of Pritchard's Island, northward, some little distance, there is an opportunity for some development from the marginal street outward. The lake boulevard through this district would become the marginal way, and where so used should be not less than 150 feet wide.

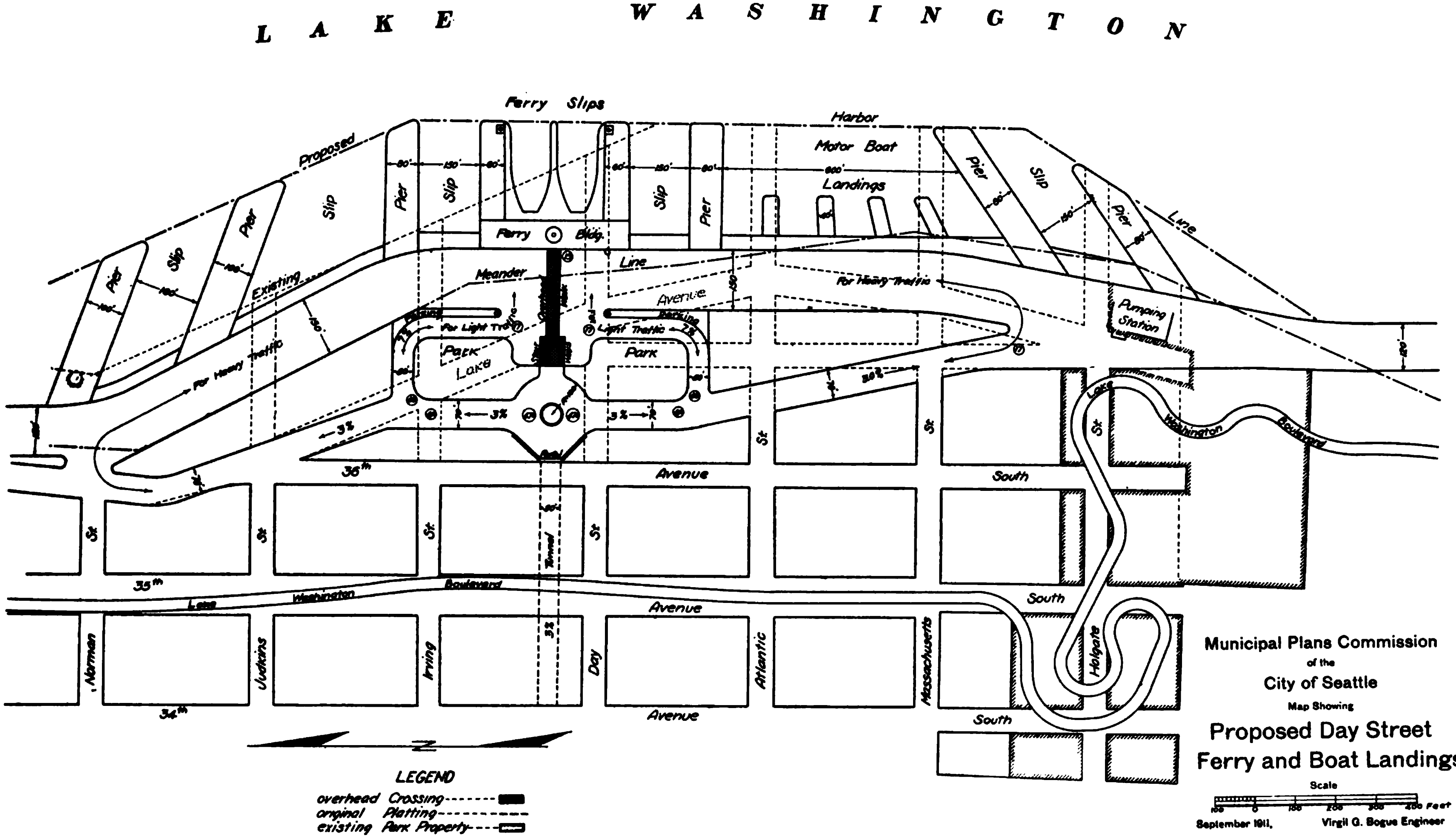
Between Rainier Beach and the Renton District, the slope from the shore back is generally quite steep, so that there is only a narrow margin outside of the marginal way or lake boulevard. Bulkhead landings can be constructed, however, and some use of the waterfront made.

LAKE WASHINGTON—RENTON DISTRICT

At the south end of Lake Washington (see Map No. 18) in the vicinty of Renton, there is a flat area of over seven hundred acres in close proximity to the waterfront, that is well suited for industrial purposes. That it will become one of the important industrial centers of the city is predicted because it is well situated for both rail and water transportation; is at the junction point of important highways, adjoins the White River and Duwamish Valleys and is close to the sources of power, both coal and hydro-electric. The question of the proper development of a district with the potential importance of this one, is of moment to the City and Port of Seattle, and should be treated accordingly. The prime factors aside from its topographical advantages, influencing the nature of improvements necessary to make the most of the possibilities of this district, are: the Cedar River; the Railways; the Arterial Highways.

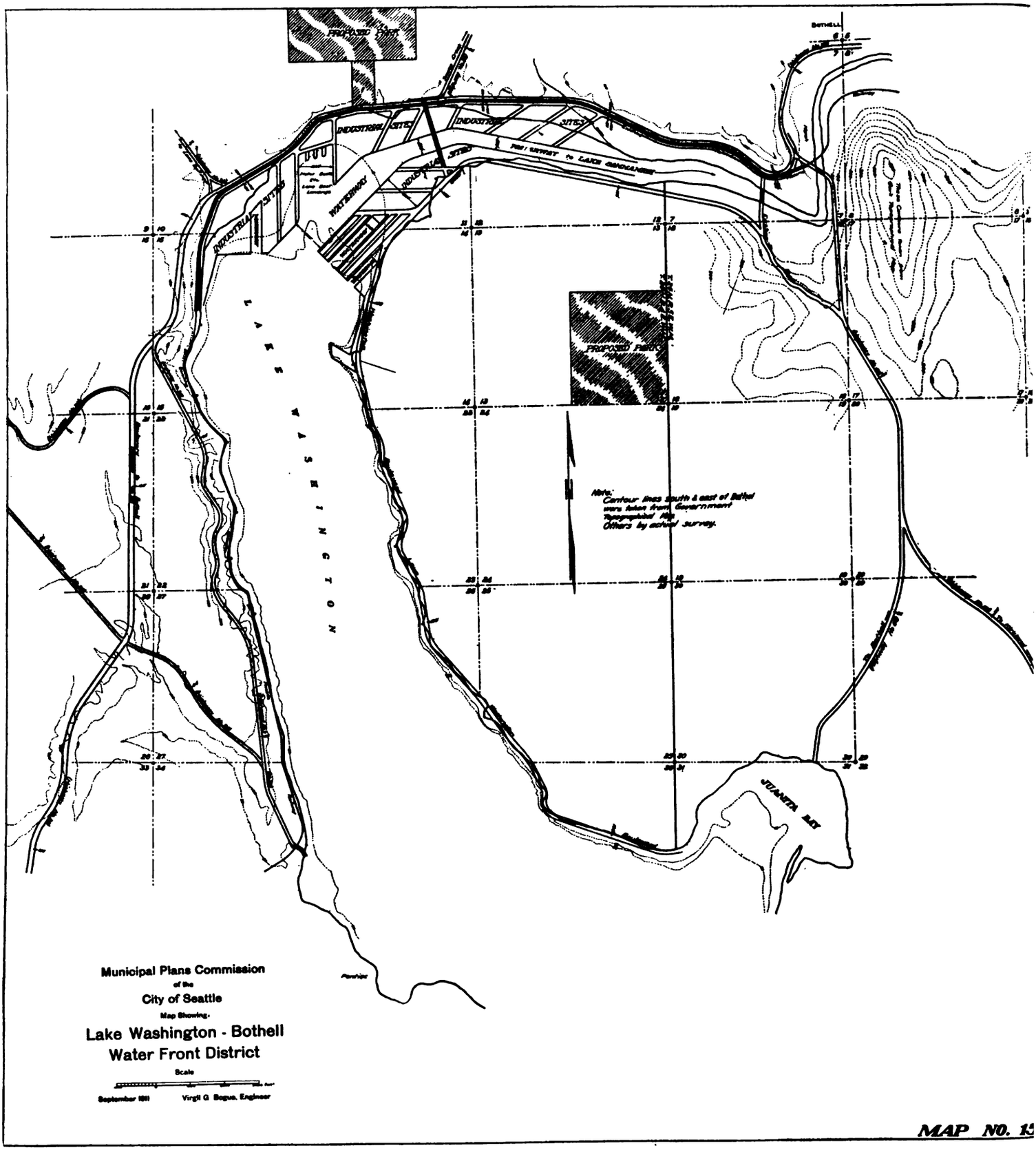
Cedar River, which now flows into Black River, may, upon the completion of the Lake Washington Canal and the consequent lowering of the lake, be easily diverted into Lake Washington. This will practically dry up Black River and give over its space to highway and railway construction. The shallow water at the south end of the lake and the marsh lying south of it can be best developed into desirable waterfront property by the construction of waterways and the resultant reclamation of the land adjoining. The diverted Cedar River should be enlarged at its mouth to form the principal waterway.

The west margin of this waterway should be in the neighborhood of 1,000 feet eastward and approximately parallel with the general alignment of the Seattle, Renton & Southern Railway Company's existing track between Emer-



Municipal Plans Commission
of the
City of Seattle
Map Showing
Proposed Day Street
Ferry and Boat Landings

PLATE NO. 14.


PROPOSED PARK
INDUSTRIAL SITES
INDUSTRIAL SITES
INDUSTRIAL SITES
INDUSTRIAL SITES
WATERWAY
PROPOSED PARK
LAKE WASHINGTON
JUANITA BAY
Municipal Plans Commission
of the
City of Seattle
Map Showing
Lake Washington - Bothell
Water Front District
Scale
September 1951
Virgil G. Bogue, Engineer

MAP NO. 13

son Avenue and Fairweather Street. Between the outer harbor line and the north line of Sec. 18, T. 23, N. R. 5 E., the Cedar River Waterway should be not less than 500 feet wide between fender lines. South of the north line of Sec. 18 a straightened river channel not less than 200 feet wide will be sufficient. From its junction with the southerly end of the 500 foot waterway, thence southeasterly, the diverted channel of the Cedar River, as located by the Waterway Commission for District No. 2, is satisfactory. (See Map No. 18.)

The north and south arterial highways from each side of Lake Washington must on account of the topography of the country pass through the narrow valley connecting the south end of Lake Washington with the White River Valley. The main highway down Cedar River, the state road to eastern Washington via Issaquah and Snoqualmie Pass, and the principal artery from the plateau southeast of Renton, must join the north and south arteries in the Renton District.

The necessity of taking care of so many important lines of travel has its effect on the plans for waterfront development. The marginal way following the lake shore southeasterly from Rainier Beach should not be less than 150 feet wide opposite bulkhead landings and should not be less than 150 feet wide back of property which may be developd with slips. Near Bryant Street the marginal way should curve to the south and follow the general direction of the existing Seattle, Renton & Southern Railway Company's track to Fairweather Street where it should curve to the east and follow along the north line of Section 18 to the Northern Pacific Railway right of way. Between the north line of Section 18 and the crossing of the Columbia & Puget Sound Railroad Company's spur near the north line of Section 8, the Northern Pacific line should be straightened so as to join these two points by a tangent. The marginal street between the line of Section 18 and the north line of Section 8 should be not less than 150 feet wide and be located adjacent to the west side of the relocated Northern Pacific right of way. East of the proposed Cedar River Waterway there is room for two paralleling waterways. The middle one should be not less than 400 feet and the easterly one not less than 300 feet in width between fender lines. Between the outer and inner harbor lines east of the proposed Cedar River Waterway there is a good opportunity for slip and pier construction, as may be required, also on the west side between said waterway and Fourth Street the location is good for slips and piers. These slips should be substantially parallel with the waterway. While some larger vessels, especially if they have full cargoes consigned to factories in the Renton District may come here to unload, it is likely that a large proportion of raw materials and commodities taken to and from this district will be transported by barges and lighters. The handling of these barges, etc., will, to a considerable extent, be done by motor tugs, consequently in this, as in other districts around the lakes, attention should be given to the provision of facilities for taking care of such boats and of providing sufficient landings for motor boats, etc., especially at the inner ends of the waterways and slips. (See Map No. 18.)

The location of the Northern Pacific Lake Washington Belt Line, the Chicago, Milwaukee & Puget Sound main line and the Columbia & Puget Sound lines through this district assures excellent railroad connections. For the most part, the plans have been made to conform to existing rights of way but, as stated in connection with the description of the marginal street, the curve in the

Northern Pacific line in the west side of Section 8, should be eliminated. An industrial switch track should be laid along the marginal ways from which spurs can lead into the property to be served. In the area between the marginal streets and the lake the spurs should, in general, be located parallel to the waterways and slips.

LAKE WASHINGTON—EAST SIDE DISTRICT

Betwen the north end of the Renton District and May Creek, a little north of the east and west center line of Section 32, the marginal street should continue adjacent to the west side of the Northern Pacific right of way and wherever there is any considerable area on the water side of the marginal way the street should be not less than 150 feet wide, otherwise a width of 120 feet is sufficient.

At the mouth of May Creek, near the north line of Sec. 32, T. 24, N. R. 5 E. there is some valley land east of the Northern Pacific right of way suitable for industrial sites. On the west side of the Northern Pacific right of way there is a strip of marshy shore land about a mile long. The water in front of this marsh shoals out to a considerable distance so that by using the earth from the dredging of slips a considerable area which would make very desirable industrial waterfront may be reclaimed. A suggestion for the treatment of this piece of waterfront is shown on Map No. 17.

Between the May Creek and the south line of Section 17, the land rises so abruptly from the shore that the waterfront margin is hardly more than wide enough for the existing railway right of way and the proposed marginal street which in this location need not be more than 120 feet in width.

Mercer Slough is located from the south line of Sec. 17, T. 24, N. R. 5. E. northward to the north line of Sec. 33, T. 25, N. R. 5 E. Between the south line of Sec. 17 and the east and west center line of Sec. 8, is a quite extensive marshy and shoal water area which may be easily reclaimed for industrial sites. From the south half of Sec. 8, Mercer Slough extends northward following very closely the section line between Sections 8 and 9, 4 and 5, and 32 and 33. On either side of it there is a marshy valley from one-half to three-fourths of a mile wide which may be reclaimed and made suitable for industrial sites. On Map No. 17 is suggested a scheme for the development of the property. Between the south line of Sec. 17 and the north line of Sec. 8, the marginal street should be located a block west of the Northern Pacific right of way. The waterways and slips should extend in a southwesterly direction from this marginal way. The entrance to what may be termed the Mercer Slough waterway should follow this general direction and will leave the existing northerly shore at the south of the slough approximately 500 feet distant. At a point in the west half of the southwest quarter of Sec. 9, the waterway should turn, thence extending northward. From the turning point outward the waterway should be at least 600 feet wide between bulkhead lines, but from this turn northward to a point a little north of the south line of Sec. 5 a width of 400 feet would be sufficient. Through Sec. 5 the waterway may be narrower or not as the needs at the time of development may require. At the terminus, a turning basin should be provided. A small waterway of this nature would not be expensive to construct and the earth obtained in the dredging would be available for reclaiming the adjacent land. Northward from the 600 foot entrance it is not likely that facili-

ties for large boats will be required, it being assumed that the waterway will be used largely for barge and lighter service to factories and industries located along its margin.

The marginal way along the east side of the slough should be produced northward paralleling the general direction of the waterway at a distance varying from 400 to 1,000 feet. On the west side a marginal street should be provided also paralleling the waterway at about the same distance. These streets should be properly connected north of the north end of the waterway and would from there be merged into the arterial highways leading northward. The easterly marginal way would not be less than 150 feet in width and the marginal street on the west side of the waterway should not be less than 120 feet in width. On these marginal streets an industrial belt line should be constructed, the tracks to the east and west sides of the waterway being connected by a loop running to the north end as suggested on Map No. 17. The development of this district along the general lines indicated, would make available in the neighborhood of 700 to 800 acres admirably situated for industries and factories, especially those desiring large areas of land.

Northward from Mercer Slough the proposed lake boulevard cuts across country to Meydenbauer Bay, the easterly shore of which is followed to the north end of the bay. From Meydenbauer Bay northward the boulevard follows an irregular course keeping back of the headlands and again reaches the waterfront at Yarrow. About Mercer Island and along the east side of the lake from Mercer Slough to Yarrow the waterfront is especially attractive for lake front residences and has been considered accordingly. At Meydenbauer Bay landing facilities for lake steamers, ferries, motor boats, etc., should be developed. A little south of the entrance to Meydenbauer Bay and just west of the east line of Section 30, T. 25, N. R. 5 E., is a small cove which is admirably situated for a ferry and boat terminal for vessels connecting with points on the west side of the lake. It is especially well located with reference to the proposed Day Street terminal, as between these two points a quick ferry service can be given. The arterial highway and boulevard system proposed in this vicinity will make the landing point easily accessible from the country east of the lake between Mercer Slough and Yarrow.

On the lake front between Yarrow and Juanita the lake boulevard should follow the shore line and be used as a marginal way at points where commercial development of the waterfront takes place. (See Map No. 16.) It should be not less than 120 feet wide. In the vicinity of the junction of Market Street and Lake Avenue, Kirkland, there is a natural terminal point for ferry and shipping traffic to a large area of country easterly of Lakes Washington and Sammamish. From this location main highways will lead along the lake shore northeasterly through a large upland country to connections with Sammamish Valley points, easterly to Lake Sammamish, Snoqualmie River and eastern Washington points and southeasterly through the upland area between Lakes Washington and Sammamish.

All these projects are factors which will tend to make the Kirkland terminal an important water gate to the east shore and have been considered in making the suggested improvement of the Kirkland waterfront as shown on Map No. 16.

A gateway of the importance this will become should be treated in a way

that will make it attractive and impressive. A sufficient area of land north of Lake Avenue and west of Market Street should be acquired for the creation of a plaza large enough to prevent congestion of traffic. In the laying out of this section provision should be made for looping the street cars which will eventually center in front of the ferry landing. Ultimately a ferry building of monumental design will doubtless be built facing the plaza.

Juanita Bay, located just north of Kirkland, is a shallow inlet which, when properly laid out, will become a very attractive industrial waterfront property. Railway connection with the Northern Pacific Belt Line can be made through the valley, running northerly and easterly from the head of the bay. The marginal way for the waterfront should be in line with Market Street produced north from Kirkland. That part of it on which switching tracks will be laid should be not less than 150 feet in width because it will be one of the links in the arterial highway passing through this district. The lake boulevard should skirt the head of the bay as shown on Map No. 16; thence around the lake shore to the north end of Lake Washington. The lake boulevard on the north side of Juanita Bay can readily be laid on a tangent following the general direction of the shore line. This line should be made the base line for laying out the waterfront property. The outer harbor line, approximately the 30 foot contour line below lake level should be in the vicinity of Oregon Street, produced northerly across the mouth of the bay. Two waterways should be laid out extending northeasterly from this outer harbor line and paralleling the lake boulevard on the north side of the bay. The northerly waterway which would naturally be the longer, should have a clear width of 400 feet between fender lines and be located in the neighborhood of 500 feet from the lake boulevard. There should be left an area in the neighborhood of 900 feet in width between the two waterways. The easterly waterway should also be be not less than 400 feet between fender lines. At the end of the area between the waterways, if required, there will be sufficient space for the construction of three good piers. On the south side of Juanita Bay near the outer end of the southerly waterway adjacent to the proposed park, a ferry service will eventually be needed so that provision for ferry slips and landings for lake steamers, etc., should be made. Industrial tracks serving this property will lead off the marginal way at the easterly end of the bay and run generally parallel with the waterways. The land that will be reclaimed in connection with the dredging of these proposed waterways together with the level land adjacent to the bay, will make in the neighborhood of 500 acres of attractive industrial property.

Northward from Juanita to the north end of the lake the land rises abruptly from the water and has been considered as residential property. The north end of Lake Washington while it is, strictly speaking, outside of the limits under consideration by the Municipal Plans Commission, is of such importance that it becomes difficult to determine upon plans for highways and transportation leading from the city northward without taking it into consideration. For that reason a general study of the situation in that district has been made.

Sammamish River connects Lake Sammamish with Lake Washington and eventually a channel will be dredged connecting the two lakes, which though not necessarily designed for the use of large boats, should have a sufficient depth to be navigable by smaller vessels. This channel, from its junction with Lake Washington easterly for a mile or two could readily be made a valuable

commercial waterway and should have a width suitable for such purposes. The water is quite shallow for a considerable distance at the north end of Lake Washington so that the outer harbor line, approximately on the 30 foot contour line below lake level, can be located a little south of the north line of Sec. 15, T. 26, N. R. 4 E. (See Map No. 15.) The entrance to the waterway should be not less than 1,000 feet in width in order to obtain material for filling the areas alongside. In the vicinity of the east line of Section 10 a basin about 1,000 feet wide should be provided on the north side of the waterway. In this basin should be located the landings for lake steamers serving the country northward of the lake. This basin will also become an important motor boat harbor. Above the first bend in the waterway a width of 500 feet should be sufficient and beyond the second bend 400 feet. The arterial highway leading from the city to Bothell passes around the northerly end of the lake adjoining the north side of the Northern Pacific right of way. This thoroughfare should be 100 feet in width. Adjacent to the southerly side of the Northern Pacific right of way, skirting that portion of the waterfront which is suitable for development, an additional 80 feet of street width should be provided for marginal way purposes. The marginal highway along the east side of the lake should swerve to the east and follow along the south side of the Sammamish waterway to a connection with the road between Kirkland and Bothell in the vicinity of its intersection with the north line of Section 18, T. 26, N. R. 5 E. Such portions of the highway as will be occupied by switching tracks should not be less than 160 feet in width.

A service track should eventually be run from a connection with the Northern Pacific line in the vicinity of Bothell to Lake Washington following the south shore of the Sammamish River. It should be located on the thoroughfare which will become the marginal street along that part of the waterfront suitable for industrial purposes.

In addition to the shoal and marsh lands described that may be reclaimed, there is a quite extensive level area of land on the north side of the lake at the mouth of McAleer Creek and Swamp Creek, which is adapted to industrial uses.

SHORE FRONTAGE OF SEATTLE'S HARBOR

(Mileage Estimated)

An approximate estimate of the length of Seattle's future shore frontage is shown in the following tabulations, which include the East and West Waterways, Duwamish, Smith's Cove and West Point Waterways, the waterway at the entrance to Salmon Bay and the Renton, Mercer, Sammamish and other waterways shown on the waterfront maps, but does not include the ordinary pier frontage.

Districts	Shore and Waterway Frontage
West Seattle	13.46 miles
Harbor Island	7.74 "
Duwamish Waterway	8.89 "
Central Waterfront	2.67 "
Smith's Cove—West Point	8.52 "
Ballard (below the lock)	12.10 "
Total tidal frontage	53 miles

Ballard (above the lock)	5.67 miles
Lake Union	8.52 "
Lake Washington—West Side	31.18 "
Lake Washington—East Side	35.98 "
Lake Washington—Renton	4.54 "
Lake Washington—Mercer Island	13.63 "
Sammamish Waterway and Lake	40.00 "
Total non-tidal frontage	140 miles
GRAND TOTAL	193 miles

A considerable portion of this frontage is not suited for commercial or industrial purposes, but is attractive as residential and park property.

The lengths of shore frontage roughly classified as to uses are as follows:

LOCATION	COMMERCIAL	RESIDENTIAL
Tidal frontage (below the lock)	40 miles	13 miles
Non-tidal frontage (above the lock) (exclusive of Sammamish Lake and channel)	48 miles	52 miles
TOTAL	88 miles	65 miles

DRY DOCK

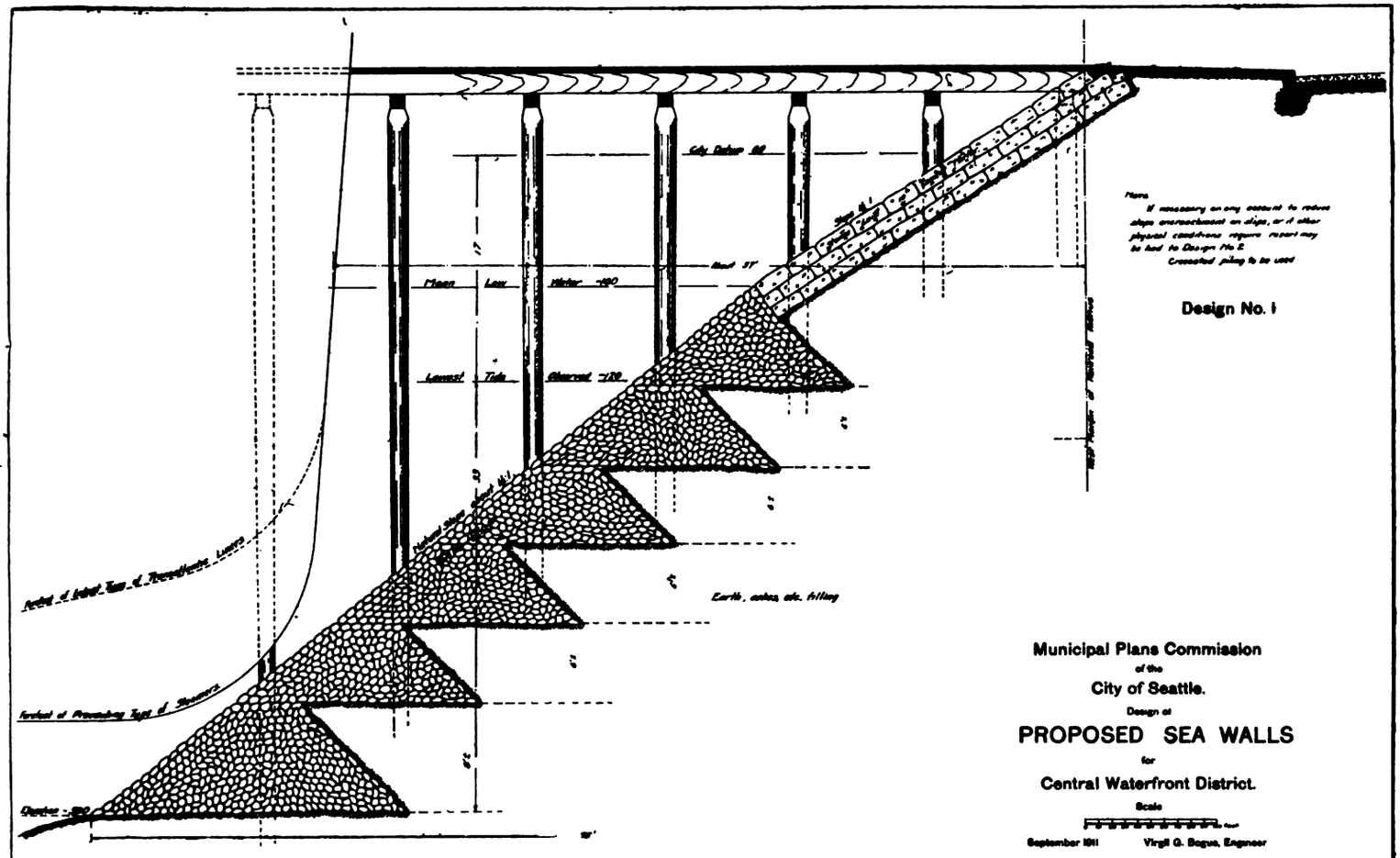
The matter of a dry dock to accommodate large vessels has been kept in mind in connection with the studies made of the waterfront. There are in the various sections of the harbor a number of desirable locations for floating docks, but the location of a graving dock is a more serious problem. While surveys and drawings have not been made, the indications are that a good location for a large dry dock may be had along the southerly shore of Alki Point. A dry dock and ship yard in that locality would probably require some change in the marginal way.

SEA WALLS

The tide land lying between Railroad Avenue and the inner harbor line and south of an east and west line drawn about three hundred fifty feet south of the center line of Connecticut Street, has been filled. Also north of the east and west line mentioned to the south line of Washington Street, part of the area has been filled.

The Pacific Coast Company has built a heavy concrete wall around its portion of the above described areas, so arranged as to leave satisfactory slip and pier accommodations.

The areas remaining should have sea wall protection whenever the temporary bulkheads have been destroyed by the teredo. This wall should be so planned as to provide for slips and piers of such dimensions as may be approved by the Port of Seattle.


Design No. 1
Municipal Plans Commission
of the
City of Seattle.
Design of
PROPOSED SEA WALLS
for
Central Waterfront District.
Scale
September 1911
Virgil G. Bogue, Engineer

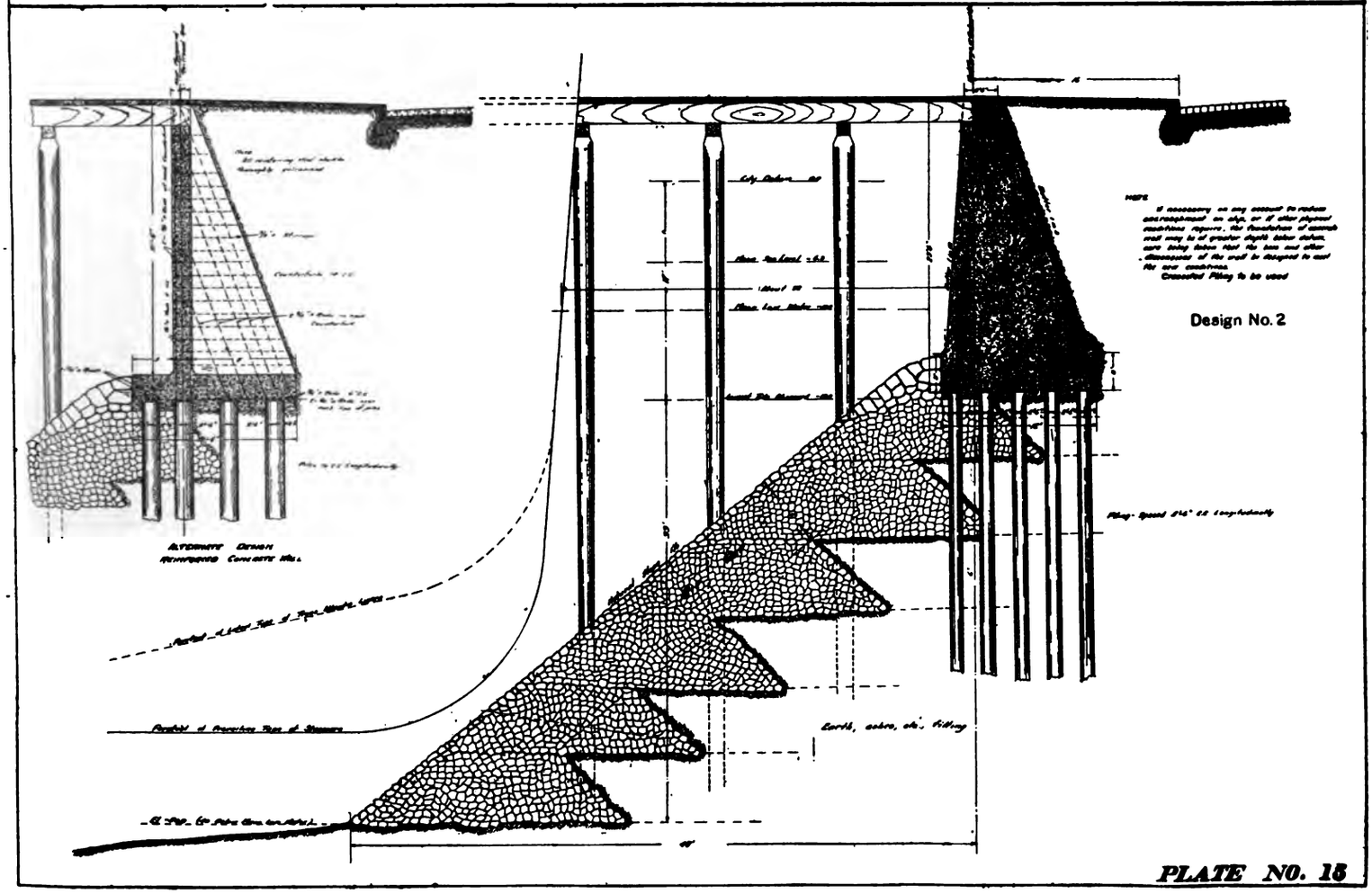

Design No. 2

PLATE NO. 15

On reference to Map No. 9, it will be seen that the areas above described afford opportunity for fairly commodious slips and piers, and the same may be reasonably said of the strip between Washington Street and Madison Street. Between Madison Street and Mercer Street the tideland strip is narrow, and as a consequence the best location for the sea wall here is generally along the west margin of Railroad Avenue, widened where necessary. The same location applies to the area between Mercer Street and Smith's Cove (see Map No. 9), it having been recommended in this report that the slips and piers of this area should be parallel, having a north and south direction and occupying all the space outward from Railroad Avenue.

Other than for the marginal lines of the principal waterways and the westerly marginal line of Railroad Avenue, widened where necessary, from Madison Street to Smith's Cove Waterway no sea wall locations are herein designated. Between Mercer Street and West Point, as described under the caption "Smith's Cove-West Point District," designated on Maps No. 9, and No. 10, is shown an entirely new plat, on which the marginal way west of Smith's Cove Waterway has been located near the foot of the bluff. In this and all like situations those who improve the property will, in many cases, desire to fill considerable areas, the materials therefor being largely obtained by dredging slips into the tideland strip toward the proposed marginal way.

Sea walls should be constructed by the Port of Seattle in a manner provided by law.

In all cases where owners of waterfront property desire to fill private property outside the located sea wall, they should be permitted to do so, on approval of their plans by the Port of Seattle, the extra cost of enclosing their filled holdings by a sea wall to be borne by them.

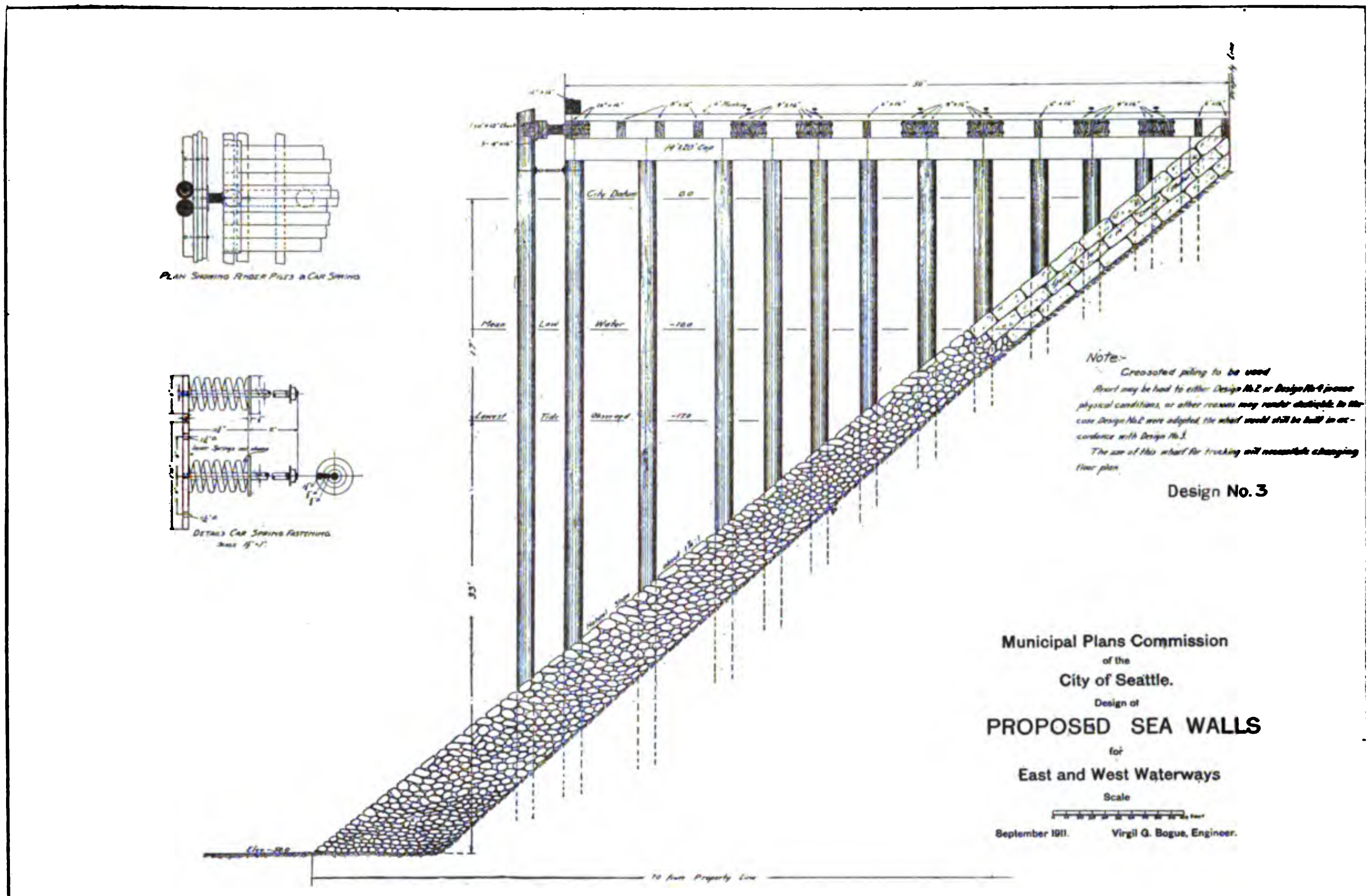
In the evolution of things there will arise cases where owners of waterfront property will prefer to enclose their filled areas with practically vertical concrete walls, as has been done by the Pacific Coast Company, thus leaving slips entirely free of encroaching slopes. In all such cases there can be no possible objection so long as the plans co-ordinate with the plans or regulations of the Port of Seattle.

It is not practicable at this time to design a sea wall which will fit all cases and conditions. Design No. 1, on Plate No. 15, will be satisfactory for a great part of the developed waterfront.

In the construction of a sea wall according to this design, it is intended that broken rock of large size and free from dirt and small particles shall be dumped in windrows one above the other, forming the slope of the structure facing the bay. On completion of the first windrow to a level eight feet or more in height, as required by local conditions, the area behind, that is, on the shore side, is to be filled by regrade or other suitable materials. The next windrow is then built on top of the first, and on line with the slope, and filling made behind it, and by repetition of the process the work is carried on by steps to mean low water.

The face of the loose broken rock will take a natural slope of about one and one-quarter to one. After the filling is completed to street grade, a slope wall of about three feet in thickness should be laid in cement mortar from mean low water to surface of the street or floor of the dock.

This method of construction insures stability, and that part of the wall


City Datum
Mean Low Water
Lowest Tide Observed
Note:-
Creosoted piling to be used
Design No. 3
Municipal Plans Commission
of the
City of Seattle.
Design of
PROPOSED SEA WALLS
for
East and West Waterways
Scale
September 1911. Virgil G. Bogue, Engineer.

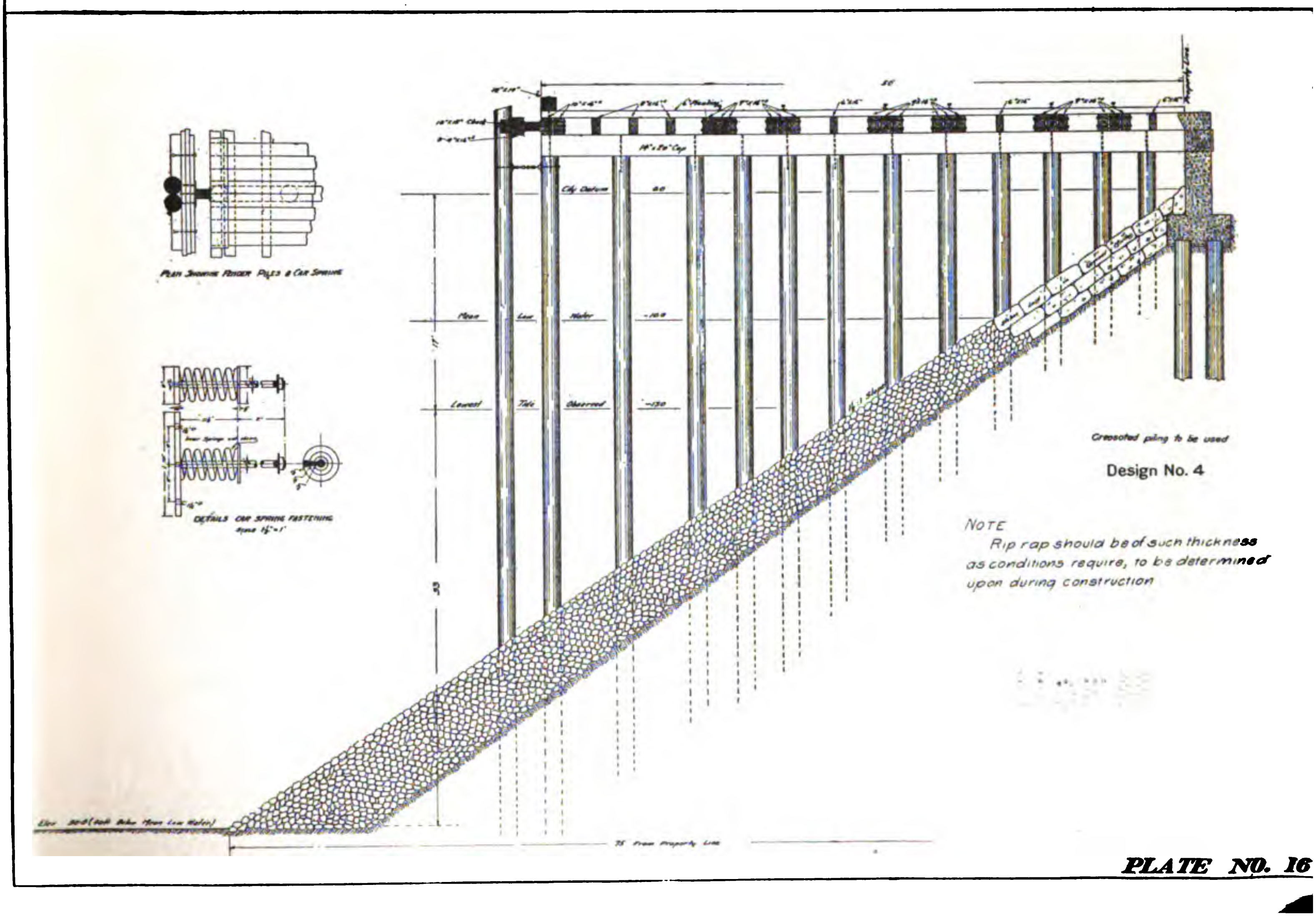

City Datum
Mean Low Water
Lowest Tide Observed
Creosoted piling to be used
Design No. 4
NOTE
Rip rap should be of such thickness
as conditions require, to be determined
upon during construction

PLATE NO. 16

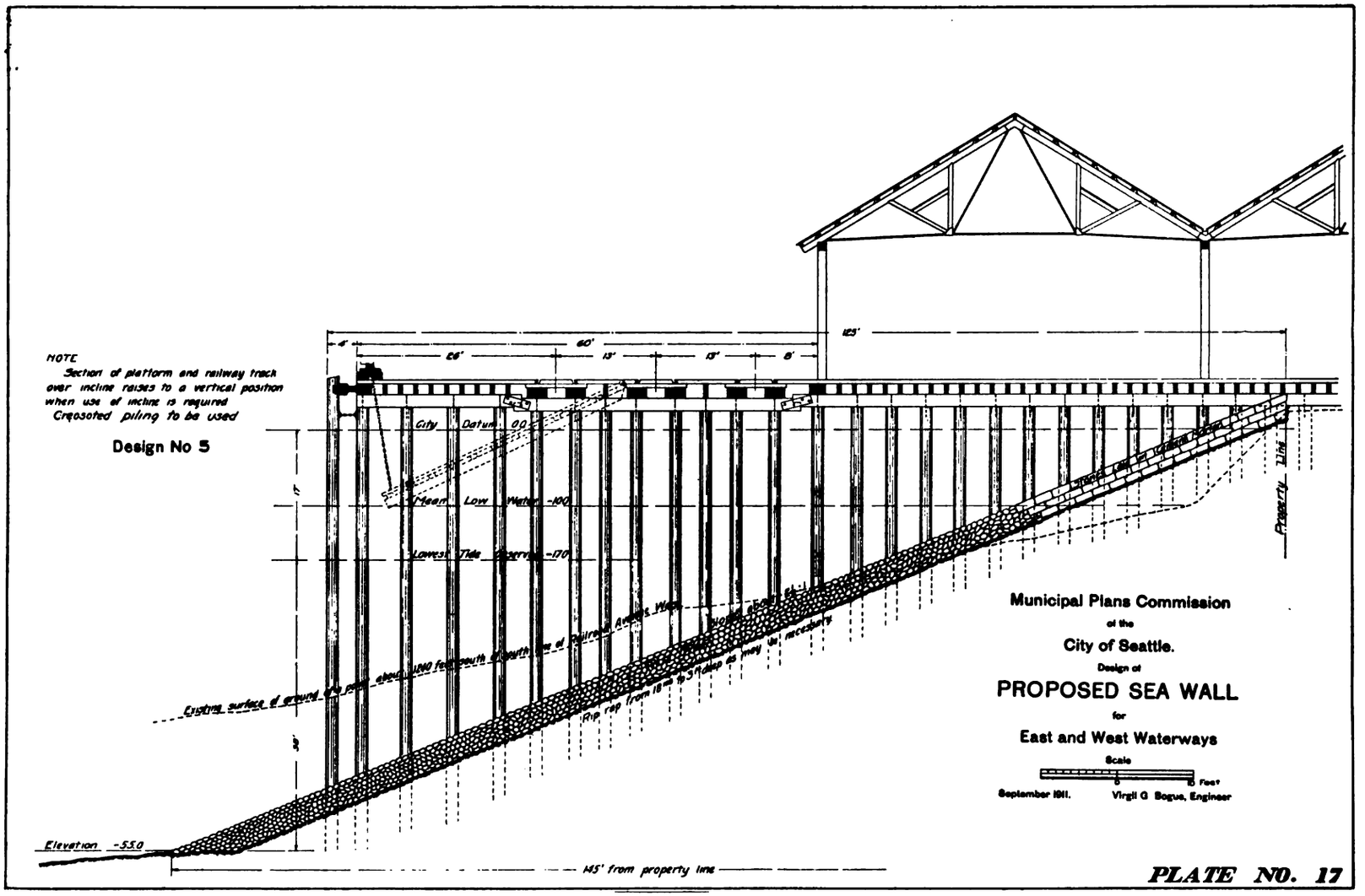

NOTE
Section of platform and railway track over incline raises to a vertical position when use of incline is required
Creosoted piling to be used
Design No 5
City Datum 0.0
Mean Low Water -4.0
Lowest Tide Observed -17.0
Existing surface of ground
Rip rap from 18" to 3'-0" deep as may be necessary
Elevation -55.0
145' from property line
125'
60'
26'
13'
13'
8'
4'
Municipal Plans Commission
of the
City of Seattle.
Design of
PROPOSED SEA WALL
for
East and West Waterways
Scale
0 10 Feet
September 1911. Virgil G Bogue, Engineer

PLATE NO. 17

above mean low water, being laid in cement mortar, will be tight, presenting a barrier against that destructive animal, the wharf rat.

Under this design the forefoot of a vessel of heavy draft may approach within fifty-seven feet of the margin of the avenue at extreme low water.

Alternative Design No. 2, plate No. 15, may be found desirable in some cases. By this design the forefoot of a vessel of heavy draft may approach within thirty-two feet of the margin of the street.

For situations on the waterways subject to but light wash from the waves, Design No. 3, Plate No. 16, may be satisfactory in some instance, but should the net width of East and West Waterways be nine hundred feet, it will be found necessary to adopt Design No. 2, so modified, however, that the bottom of the concrete wall shall be at greater depth below datum, probably not less than ten feet below extreme low tide.

It is obvious that where the material is of sliding character, it will be difficult to build on any design which does not fully provide therefor.

The difficulty and the great expense of building sea walls along the property lines of the East and West Waterways, or even fifty feet outward therefrom, have led to the suggestion that these waterways be made seven hundred fifty feet between fender lines, thus encroaching one hundred twenty-five feet on the water area of each side. The width of seven hundred fifty feet is believed to be ample and would render improvements of these waterways comparatively simple and practicable and would doubtless result in early construction. Design No. 5, Plate No. 17, is adapted to the width of seven hundred fifty feet referred to.

On the other hand there are legal questions relating to the ownership of the one hundred twenty-five foot strip which would demand settlement. This is a matter which should be taken up in detail by the Port of Seattle.

These sea wall designs all indicate the use of creosoted timber piles, but in time concrete piles will probably be found more desirable.

The cost of Design No. 1, Plate No. 15, including riprap, masonry slope wall, all filling, sidewalk and curb, will be from seventy-five to one hundred dollars per lineal foot.

The cost of Design No. 2, will be from one hundred ten to one hundred twenty-five dollars per lineal foot, including riprap, filling behind riprap face and concrete wall, supporting piles, sidewalk and curb, but not including any portion of the wharf and pier.

The cost of Design No. 3, Plate No. 16, including dredging, riprap, masonry slope wall, wharf and tracks complete, will be from sixty-five to eighty-five dollars per lineal foot.

The cost of Design No. 4, including dredging, riprap, masonry slope wall, concrete wall and supporting piles, wharf and tracks complete, will be eighty to one hundred dollars per lineal foot.

The cost of Design No. 5, Plate No. 17, including dredging, riprap, etc., will be fifty dollars per lineal foot. The piles, wharf and tracks complete will add sixty dollars thereto, making an aggregate of one hundred ten dollars.

In the case of each of these designs, except No. 5, for the purpose of estimating costs, the bottom of the riprap face is assumed to be fifty feet below city datum, and the top of the wall to be six and five-tenths feet above datum, making fifty-six and five-tenths feet in all and providing for a depth of water

not less than thirty-three feet at extreme low tide. With Design No. 5 the estimate extends to a depth of 55 feet below city datum.

In the case of the waterways, the areas occupied by the riprap slopes of the walls can be used for marginal wharves for warehouses.

This would be the first construction, but eventually after at least some years, permanent concrete walls should be built on the fender line, the space behind being filled up so as to form permanent work.

DRAWBRIDGES

We have seen how essential the proper development of the harbor facilities of a seaport is to its prosperity, growth and advancement.

Seattle has advantages in her combination of bays, lakes and canals, together with her location and facilities of communication with our own country and with foreign lands, equalled by few ports, and, certainly, excelled by none.

Of all the opportunities presented for harbor development at Seattle, the magnificent waterways and the proposed West Point Basin are the best for over-sea commerce, especially for large-cargo vessels and important industrial undertakings.

These waterways are Seattle's best asset in her bid for world-wide trade.

In spite of this, however, and ignoring the great interest taken by the people of the city at large in the development of the port, and, further, without consideration of the fact that one of the main objects of the Municipal Plans Commission is to secure plans which will direct and hasten the development of the port, and that these plans have not yet been laid before the people, some citizens are urging the construction of a viaduct along Railroad Avenue from Holgate Street or vicinity, across the East and West Waterways to West Seattle.

The objections to this scheme are so apparent that it seems strange they are not more seriously considered by those interested in it, who no doubt desire the ultimate good of the city.

The benefits of the viaduct would be transitory. The projectors of the scheme are endeavoring to convince themselves and others that the benefit resulting therefrom would be a complete revolution in transportation between the divisions of the city lying on either side of Elliott Bay. This might be the result if it were possible to construct a fixed bridge at ordinary street level which would be unimpeded in its functions by demands other than those of travelers to and from their daily vocations. Such a condition, however, we know is not within the range of possibilities.

The necessity of *two draws* and the fact that the proposed viaduct would be many feet above street level, face every consideration of this matter.

It may safely be asserted that there has never been, and never will be, a draw operating between two parts of a busy town that did not prove a serious drawback to every interest, public and private, therein involved.

The *people* to be served by the draws contemplated here would be taught a speedy and unnecessary lesson of patience and endurance.

It has been urged in behalf of the viaduct scheme that one has only to recall established precedent to regard it with favor. Ignoring the unsatisfactory, annoying and blighting effects of draws at Portland, Oregon, they desig-

nate Chicago and Milwaukee as examples of their extended, successful existence. As a matter of fact, these two cities are both struggling to minimize the evil effects of narrow, crooked channels and of draws, and propose to make real harbor improvements by building wharves, etc., on the lakefront.

Chicago has tested drawbridges to the limit, and a train of annoyances has resulted to the large population dependent upon them. The situation has become such that restrictions are placed upon the opening of the draws during rush hours of the morning and evening, in order that the suffering public may be partially accommodated. The new order is a mitigation of the evil, so far as the people are concerned, but has so greatly increased delays to navigation and business that the final outcome has been a severe decline in the commerce of the port.

The Chicago Harbor Commission was finally appointed, and after months of conscientious work submitted a report in which the following recommendations were made:

First: That the draws be increased to a length to provide a clear channel of not less than two hundred feet.

Second: That a widening of the river be made at certain points.

Third: That an outside harbor be created. (See report to the Mayor and Aldermen of the Chicago Harbor Commission, March, 1909.)

The message of Mayor Busse to the Chicago Council, dated January 6, 1908, clearly brings out the difficulties which caused the commercial decline above noted. The following extract from this message is instructive:

> "I desire to call your attention to the pressing need of giving careful and comprehensive consideration at the earliest possible date to the question of Chicago's harbor facilities. It is a notorious fact that the lake commerce of Chicago, once the pride and boast of this city, has been steadily decreasing for a number of years. This city now, I believe, ranks fourth in lake commerce where once it stood first and far ahead of its nearest competitor. Without counting the ore shipments from the iron beds of the Northwest, the City of Duluth, which is but a pigmy compared with Chicago, and which serves as a distributing center for a much smaller territory, ranks about even with this city in general lake commerce.
>
> "The one and only reason for Chicago's decline in this respect is the inconvenience and inadequacy of its harbor facilities. We have been inclined to rest easy in the belief that the tunnels formed practically the only obstruction to commerce in the Chicago River, and that the lowering of the tunnels will end all of our difficulties in this respect. I agree with many who have studied this question, that the tunnels constitute only a small part of the conditions which hamper shipping in the Chicago River. Even with the tunnels lowered to any depth the largest boats in use on the Great Lakes would still find it difficult to make free use of the Chicago River on account of its narrowness and crookedness. Many millions of dollars could be spent in straightening and widening this river without making it in any degree adequate for the demands of lake commerce that ought to come to Chicago, *for so long as we have bridges across the River (and we cannot do without bridges), boats will be delayed in coming in*

and going out, and every such delay means a hampering of commerce in the matter of time and also high towing charges which are a burden upon the freight carriers.

"The time has come when Chicago must decide whether it will depend for the future entirely upon the harborage afforded by the Chicago River and the Calumet River, or whether it should not take steps to utilize at least some portion of its lake front for shipping purposes. Lake commerce played a large part in making Chicago what it is. I do not believe it wise to ignore entirely that advantage which Chicago has by reason of its location, and it is only a question of time when that advantage will be lost, unless we secure other harborage facilities than those afforded by the Chicago and Calumet Rivers. If lake commerce cannot find convenient accommodation at Chicago, it will go to the harbors being developed just over the state line in Indiana, just as certainly as water runs down hill."

The assertion has been made that in certain ports of Europe there are draws which have long been in use, and locks leading to wet docks which should be even more an obstacle to navigation than draws. It is true that there are draws in Europe on the lines of canals that have existed for centuries and which had to be crossed. There are also draws at some of the locks which open to the full width of channels. Such draws do not impede the movement of vessels, because they open to the full width between lock walls and are handled rather more readily than are the lock-gates themselves, whose manipulation necessarily consumes more time.

As relates to locks: It is true that to serve ports of Europe where the tidal range is great, wet docks have been in use for many years and locks leading thereto are necessary. Vessels enter these docks at high tide and remain at that level until they depart. The handling and storage of cargo under such conditions is considered less burdensome than if alongside of open quays or wharves.

The occasion of these wet docks is necessity, not merit. This necessity arises from the extreme tidal variation at the various ports. For instance, the extreme at Liverpool is given as thirty-six feet, and at Bristol as forty-four feet. To load and unload under the handicap of such tides would be well nigh impossible, hence basins or wet docks are built into which the ships enter, where loading and unloading can take place with the minimum of change of elevation.

Conditions in the United States, owing to small tidal range, etc., do not demand wet docks.

The following from the Diplomatic and Consular Reports of the British Government, No. 4182, dated March, 1909, outlines the position of shipping interests with regard to the matter of wet docks at the Port of Antwerp:

"The report recently issued by Monsieur C. Corty, President of the Antwerp Chamber of Commerce, and a member of the advisory commission on the Grande Coupure, is of considerable importance, coming from such an influential representative of the commercial world at Antwerp regarding the project. In his report Monsieur Corty states that he has examined the question of the extension of the port of Antwerp from the practical point of view of assistance to

shipping and commerce, leaving aside technical details, and he is convinced that the owners of the vessels frequenting this port prefer direct access to the quays rather than dock berths approached by locks. Indeed, the report states that if it is desired to further inquire into the wishes of regular lines which have chosen Antwerp either as a terminal port or port of call—especially the most important lines—it would be found that they all seek to avoid, *at any cost,* entry through locks into docks; in fact many of them would make direct access to the river quays a *sine qua non* of their making Antwerp a port of call.

"Navigation requires more and more that there shall be as little delay as possible; and if, in addition to the time occupied in navigating the Scheldt to Antwerp, large regular liners were obliged to lose further time in entering the docks, it is highly probable that they would be removed hence to ports offering river quay facilities. As regards Antwerp, regular lines account for some eighty per cent of the total traffic, and it would be ruinous to the port not to take into account in the extension scheme, the desire of such important and faithful clients.

"The President of the Chamber of Commerce uses these arguments in favour of the construction of the Grande Coupure, which would furnish Antwerp with many miles more river quay space than is now available. He goes on to compare Antwerp with the competing ports of Hamburg and Rotterdam, both of which possess greater lengths of river quays than Antwerp. The chief requirement at Antwerp is river quays having a considerable depth of water at low tide, and the project which lays down the greatest length of quayage with direct access is undoubtedly the one which will most largely benefit the port.

"As a further argument in favor of constructing the Grande Coupure, it is urged that vessels of the mercantile marine are continually being increased in dimensions and draught. At the present time the largest vessel frequenting the port measures some 591 feet in length. In the spring of 1909 a new vessel belonging to the Red Star Line, measuring about 616 feet will be attached to that company's Antwerp-New York service, and it is estimated that this vessel will be the longest that can be brought up to Antwerp with safety under existing conditions. The River Scheldt up to this port has several awkward bends, the most dangerous of which—to large vessels—are situated between Kruisschans and the beginning of the river quays, and it is these latter bends which the construction of the Grande Coupure would do away with in addition to the furnishing of vastly augmented river quay space. It is understood that the North German Lloyd proposed to utilize, during 1909, large steamers of 610 feet length, drawing some 29 feet of water, for its Australian service, touching at Antwerp, and that that company recently applied to the Belgian Administration of Marine for information as to whether vessels of such dimensions could safely enter the port at present. The reply of the administration was that these vessels could navigate the Scheldt to Antwerp on the understanding that the pilots

should be permitted to choose a favorable time, and on condition that the vessel would be supplied with a stern anchor to keep them from swinging in the event of their having to anchor in narrow passes of the river.

"It must not be inferred from this that the Scheldt presents dangers to ordinary navigation, but that the river at present limits the dimensions of vessels which can with safety reach the port of Antwerp. In view, therefore, of the continually increasing length and draught of ships now being constructed, and the fact that the Suez Canal, the channel to New York and the entrances to other great ports are being deepened to accommodate the largest vessels, it is considered in maritime circles that Antwerp, if it be desired to retain her position in the forefront of the world's ports, should not be backward in making the necessary improvements to provide safe means of entry and adequate accommodation for the largest vessels afloat.

"The arguments of the President of the Chamber of Commerce are incontrovertible from the point of view of the commercial future of Antwerp as a port, and it appears likely that the Government scheme for the construction of the Grande Coupure will be carried into effect, unless some grave technical difficulties stand in the way of the undertaking.

"Further testimony in favour of the construction of the Grande Coupure and of river quays is contained in the address of Monsieur A. Aerts, who is also a member of the commission, regarding the construction of the cutting, who stated that the best docks, entered by locks, do not equal river quays in utility. In his opinion the ports of Hamburg, Rotterdam, Southampton and New York all owe their success to river quays not approached through locks, while he states that it is owing to its possessing so few river quays that the port of London has not maintained of late years the position of predominance in shipping which it at one time occupied."

The fact of the existence of draws in some of the European ports by no means implies that their construction is going on at the present time. They are, on the contrary, prohibited over channels or existing waterways which are required for the use of large modern vessels, the locks excepted.

On the River Clyde there are bridges, but *none* across the harbor. The shipping is accommodated below Glasgow Bridge. Ferries serve the various crossings and passenger boats ply up and down stream. The same is true of the harbor of Hamburg, and of London and most other ports. In all these ports ferry charges are very low and barely cover the cost of operation.

The proposed viaduct at Seattle could not avoid the conditions that have rendered bridges with draws so prejudicial to commerce and to the public, in the cities where they have been given every test in their operation. Wage-earners would not take kindly to unavoidable detentions caused by hitches in the service, especially in the short days of winter, and the shippers would not tolerate delays and obstacles caused by the operation of the draws. An easy way of avoiding them would surely present itself to shipping by seeking elsewhere a harbor having more satisfactory conditions; thus the destruction of

the waterways as Seattle's best commercial asset, would ensue, and the projectors of the viaduct would live to see it. The mere presentation and discussion of this project has already deterred enterprises from locating on the waterways.

A better route exists for West Seattle travelers, namely, that via Spokane Street, supplemented by low grade diagonal streets leading from Spokane and Arizona Streets at the foot of West Seattle hill. (See Rapid Transit.)

This is perfectly feasible. The construction cost of a street on the grades named from the intersection of the streets mentioned via West Wait Street to Alki Point, would not be excessive.

Further, so far as Harbor Island is concerned, a ferry crossing at the north end of the East Waterway, as illustrated on Plate No. 9, would better meet the conditions than is possible by the use of a bridge at the high elevation demanded. A ferry would land the teams at the level of the street on either side of the waterway. Low tide would of course necessitate a short steep grade up the inclines from the ferry, but for heavy loads this difficulty could be obviated for the greater part of the day by taking advantage of medium stages of water or of high tide.

What more important subject can demand the thoughtful attention of the people of the city?

The lesson of primal importance in studying Seattle's future is that of the improvement of its harbor and waterfront for the reception of the commerce of the world. That there should be no errors to correct is the first consideration. Every step in the work should be well studied, taken up with wisdom and with an entire absence of individual interest or prejudgment.

Seattle has yet to make her reputation as a world port. It is no time now, of all times, to hamper the facilities of the port in the slightest manner, or to make the mistake of building this viaduct which would drive away foreign shipping and deter industries from seeking locations on the waterways.

Drawbridges at various crossings of the Duwamish Waterway and Lake Washington Canal will be necessary, as they are on the Manchester Canal in England and in other situations. In the case of the Lake Washington Canal —after years, when Seattle shall have become a city of vast population—it is possible that drawbridges will be superseded, to some extent, by suspension bridges and tunnels. Suspension bridges, however, would only accommodate the travel between high level areas. Draws would still be required for travel between areas below the level of suspension bridges.

The construction of bridges across waterways or slips which face upon Elliott Bay should not be permitted.

The bridge across Smith's Cove Waterway at West Garfield Street should be removed to West Wheeler Street when the work of improving Smith's Cove Waterway begins.

FUTURE DEVELOPMENT OF THE CENTRAL WATERFRONT

The City Engineer in a report to the Mayor, of September, 1909, outlined a project for moving farther west that part of the harbor line between the East Waterway and Smith's Cove. The report said:

"In the construction of the work a dwarf sea wall would be built at the outer end of the proposed piers and slips, so that a fill made to the eastward of the same would raise the bed of that portion of the Sound to a level of forty-five feet below low tide, and at the western margin of the new Whatcom Avenue would be built the higher and permanent sea wall, sustaining the earth so as to make all that land to the eastward thereof solid ground and raised to an elevation of some seven feet above extreme high tide.

"The accomplishment of this undertaking would have to be authorized by the state; it cannot be undertaken directly by the city, and, in fact, owing to some of the provisions of the state constitution pertaining to the establishment of harbor lines would probably have to be ratified by a vote of the people of the state. Federal authorities would also have to be given due and proper consideration.

"The work could be carried on in sections, undertaking first those sections which would be least affected by any changes in the waterfront and not attempting to complete the whole until the time of the expiration of the present leasehold interests, which still continue for more than twenty years. Even if undertaken now as one stupendous contract by bringing earth by train for the purpose of making the fill, the entire work could be accomplished by not to exceed $17,500,000. If prosecuted by degrees, the outer or submerged sea wall being constructed first so as to retain the fill material naturally discharging and being discharged into the bay, the final work could be accomplished at materially less cost.

"The area that would be added to the westward of the present outer harbor line would be a trifle in excess of 310 acres. Deducting therefrom the acreage which would be absorbed, in slips and streets, there would remain a new commercial area of a trifle over 200 acres. Much of this land so redeemed would have a value in excess of $5.00 per square foot. Some parts have a lesser value. Averaging the value to $5.00 per square foot, the new commercial area thus created would have a value of $45,000,000. Deducting $17,500,000, there would remain a net profit resulting from the undertaking of $27,500,000. In addition to this there would be the incalculable advantage and benefit accruing to the city by reason of its ample streets upon a level grade, thus reducing the cost of all transfer freighting along the waterfront; and there would be, moreover, added 3.52 miles of frontage obtained by the increased length of slips and thus a waterfront now possible of being developed to a length of 7.73 miles would have a possible development of 11.05 miles.

"There will, no doubt, be honest and well meaning people who will affirm that such an addition to our waterfront need never be contemplated and who will continue to claim, as some do now, that the 7.73 miles of possible frontage is already excessive. When we turn to the report of the harbor commissioners for the city of New York and read that their frontage is now 445 miles, and learn from the same report the fabulous sums of money that are being expended

to still further increase this mileage, we readily comprehend that our city is at present poorly equipped for carrying on actual commerce, but inasmuch as the major part of the growth of New York City has taken place within a period of fifty years it certainly cannot be too early to contemplate adding at least three miles of cheaply-made and close-in waterfront facilities for the commerce of Seattle."

Since the date of the report the Denny Hill regrade has been completed, most of the material therefrom having been deposited along the waterfront between Lenora and Vine Streets, from the harbor lines outward.

In connection with the work of the Municipal Plans Commission, careful soundings were made along the entire waterfront, which would be affected by the project referred to. These soundings have been platted on a map of 300 feet to the inch, which is among the records of the Commission. A study of this map clearly demonstrates that nearly all of the material discharged by the hydraulic process sinks to the bottom, but little of it being swept away by the tide; also that it would be feasible to build five piers on the area filled having lengths varying from 800 feet to 1,900 feet and occupying 2,500 feet of waterfront. The fill is apparently solid and stable, and there is no doubt whatever that it will remain in place for all time, the tidal currents having no effect upon it. This is mentioned here because it indicates that the dwarf riprap sea wall mentioned in the City Engineer's report may not be necessary.

The disposition of the vast accumulation of material from excavation of basements and foundation walls, subways, etc., also clinkers and other heavy refuse in a large city is in some cases more or less difficult of solution. At New York these materials are loaded in bottom-dump barges and discharged at sea or at least, in the lower bay. At Seattle the bay offers inexpensive dumping ground for such material, and if the process of dumping is watched and directed by the city authorities and in accordance with a general plan, it will only be a matter of time when the moving of the waterfront westward can be accomplished at an expense which will be but a fraction of the value of the reclaimed property. The city would then have at least one more level north and south street connecting the north and south ends of the city and an extensive area for wholesale stores, etc.

It will be many years before such project can be carried out, but the Port of Seattle can well have it in care and see that from time to time materials dumped in the bay shall go to the right location. This will require a carefully studied plan having in view the functions which the waterfront affected is to discharge.

There are at present 60 boats in the Mosquito Fleet. Years hence the number will be multiplied several times. There are also 220 steamers in the coastwise or foreign trade which make this their terminal port or port of call. The number will greatly increase. The protected waters of Puget Sound and channels to the north, even to the Alaskan ports, furnish area for unlimited growth of the motor boat fleet.

The waterfront we are dealing with will, of necessity, be the port for all these vessels and craft, and they will, if the development is properly guided and guarded, occupy practically the whole of it. It follows that some por-

tions of this waterfront should be arranged for the smaller boats and other portions for the passenger, mail and express steamers. Such an arrangement gives scope for a plan which will greatly reduce the amount of filling needed; the smaller boats to find berths along frontage, as is suggested by the sketch (see Plate No. 18). Two or three more watergates of the same class will be required. If these watergates are all located so as to occupy spaces opposite the deepest areas it will materially diminish the amount of filling and speed the day when the project can be undertaken.

In the sketch it has been tentatively assumed that the marginal street of the new waterfront would be at an elevation of approximately 26 feet above datum, and that the service tracks pertaining thereto would be in shallows crossed by bridges at the cross streets. The grades of the streets connecting the existing Railroad Avenue with the new marginal street would be from two to five per cent, according to location. On some such plan as this abundant area can be reserved for park purposes, and with suitable care the waterfront can be made most attractive.

It will be so many years before the project can be carried out that it ought not to affect in any way the improvement of Railroad Avenue, or the building of sea walls along or near its west margin as provided for under the caption "SEA WALLS."

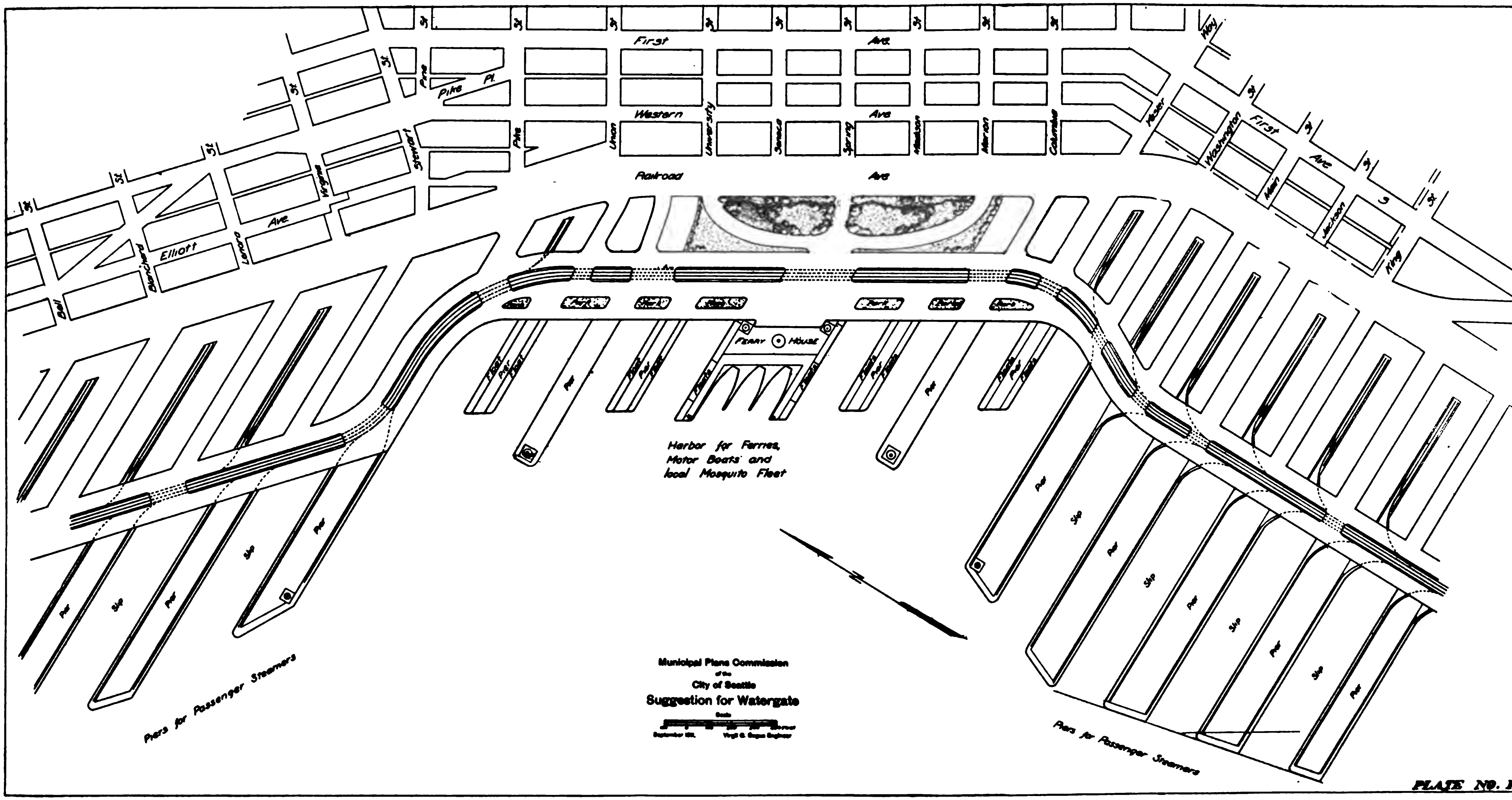

Municipal Plans Commission
of the
City of Seattle
Suggestion for Watergate
Scale
Harbor for Ferries, Motor Boats and local Mosquito Fleet
Piers for Passenger Steamers
Piers for Passenger Steamers
Ferry House
Railroad Ave
First Ave
Western Ave
Elliott Ave
Bell
Blanchard
Lenora
Virginia
Stewart
Pine
Pike Pl.
Pike
Union
University
Seneca
Spring
Madison
Marion
Columbia
Yesler Way
Washington
Main
Jackson
King
First Ave S
Pier
Ship

PLATE NO. 14

Transportation

RAILROAD AVENUE, with its southerly extension, Whatcom Avenue between Holgate and Spokane Streets, traversing the city's waterfront from Smith's Cove to Spokane Street, a distance of five miles, is the most important thoroughfare, from a commercial standpoint, in the city. (See Maps No. 9 and No. 19.)

All traffic to and from the waterfront must avail itself of this avenue, and, being a water level street, it is advantageous for all through street traffic to and from Interbay, Ballard, Duwamish Valley, West Seattle, the Tide Flats and Youngstown, without encountering adverse grades.

On the west side of the avenue are the piers, where passengers arrive and embark, and where freight is transferred between boat and car. On the east side, and to some extent on the west side, are found commercial and business houses. Both sides of the avenue must have adequate railway facilities for handling freight economically.

At the present time the railways have franchises which, if used to their limit, would occupy practically the whole avenue except a narrow margin along its west side, which is frequently crossed by the curved tracks leading to the piers and as a consequence is rendered of but little value as a highway.

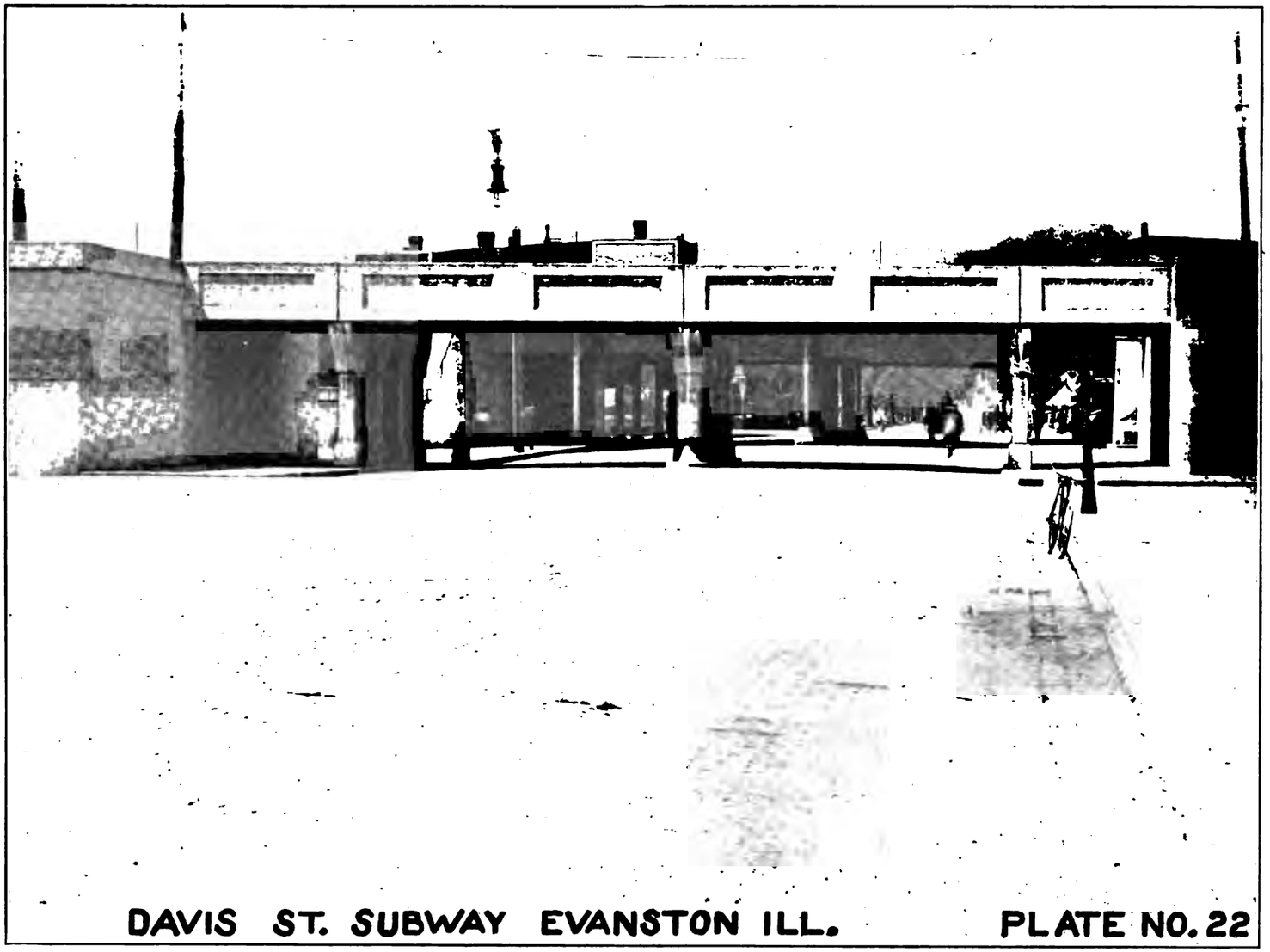
That part of the avenue between King Street and Pike Street is now actually occupied by eight tracks laid fifteen feet apart on centers, the center line of the most easterly one being also the boundary line of Northern Pacific property on the east side of the avenue from Yesler Way to Pike Street, so that one rail of this track is on the avenue and the other on Northern Pacific property.

The busiest part of the waterfront is between Yesler Way and Pike Street. It is here that most of the steamers, and the "Mosquito Fleet" find berthing. As a consequence, the avenue between the streets named is more occupied by wagons, cars and people than it is north of Pike Street or south of Yesler Way, although the latter locality is also subject to some congestion. The width of the avenue proper varies from one hundred and twenty feet to one hundred and eighty feet.

Between King and Bell Streets the railway companies are prohibited, by ordinance, between the hours of 7 a. m. and 9 p. m., to use their tracks for other purposes than switching, and between Main and Union Streets they are prohibited to move cars or trains whatsoever between the hours of 7:30 and 10 a. m. and 4:30 and 9 p. m.

From Marion Street to Smith's Cove the avenue has never been improved, except that between Marion Street and Bay Street a plank roadway is laid, beneath which the tide ebbs and flows. At Bay Street the roadway is diverted to Elliott Avenue, along which it is carried on a pile trestle tewnty-six feet wide to Smith's Cove. From Marion Street to Canal Waterway, the avenue has been brought to grade by filling and has been planked.

MADISON ST. SUBWAY EVANSTON ILL. PLATE NO. 21



DAVIS ST. SUBWAY EVANSTON ILL. PLATE NO. 22

From Holgate Street to Bay Street tracks encumber most of the avenue and teams have to find their way along or across them as best they can.

Some attempt is made to keep the avenue clean, but this is not perceptible in lasting effect. The conditions are deplorable and the appearance of the avenue is a discredit to the city.

The avenue should be brought to width of not less than one hundred and eighty feet at all points.

A sea wall should be built along the west side of the avenue, from Madison Street to Smith's Cove and the avenue filled, as described under the caption "SEA WALLS." The avenue should then be paved its entire length, Holgate Street to Smith's Cove, and Whatcom Avenue also should be fully improved from Holgate Street to Spokane Street.

The filling of the avenue will require about 2,500,000 cubic yards. Various other plans for improving conditions on the avenue have been under consideration as follows:

The building of an elevated street over the avenue between Spokane Street and Smith's Cove for ordinary street traffic, the existing avenue to be abandoned for street uses and left to the sole use of the railways. This plan which, at superficial glance, has some attractions, has been found complicated by necessities that would arise, such as building inclines, or ramps, elevating many cross streets between Railroad Avenue and First Avenue, with resulting heavy damages to street frontages, reconstruction and rearrangement of piers and buildings, etc. Also, the project, when fully carried out, would compel all street traffic passing to and from the waterfront and that part of the city south of Yesler Way, to cross the elevated street. In other words, the traffic described would have to go over a hill, both going to the waterfront and returning therefrom.

It was found that the ultimate cost of such a plan would be enormous. With all the economy that might be found reasonable, it is not probable that an elevated street could be built of permanent materials, with the changes and special construction that would be required, for less than ten million dollars. This, under all the conditions, would be prohibitive.

Another plan considered was that of utilizing Elliott Avenue, the south end of which is at Pike Street, for tracks, and placing thereon all the tracks except those serving the piers. This would relieve Railroad Avenue from Pike Street northward to a great extent.

This plan, however, would require that the grade of Elliott Avenue be lowered to at least elevation 10 for track level and that overhead an elevated street be built for ordinary street traffic, rendering it extremely difficult to reach Railroad Avenue or the waterfront therefrom, and then only by taking property for inclined roadways in the tier of blocks which lies between Railroad Avenue and Elliott Avenue, damaging or destroying much street frontage and necessitating the construction of costly structures, etc.

All projects for providing for Railroad Avenue street traffic, by elevated street plans, are further complicated by the fact that from the East Waterway to Smith's Cove the waterfront will some day (doubtless many years hence) be moved to a line farther west, as has elsewhere been described. The tracks which serve the waterfront will then go with it to the new location, leaving only the tracks which serve the stores and warehouses along the east side

of the avenue. The running tracks north of the Great Northern Tunnel portal will ultimately be unnecessary. The tunnels from the tide flats to the proposed Central Station, near the south end of Lake Union, will provide the only proper location for those tracks, thus removing practically all schedule trains from Railroad Avenue.

While the suggested elevated street along Railroad Avenue would result in easier grades on several cross streets, thence to First Avenue, this advantage would be fully offset by the "hill" mentioned, which would obstruct traffic between the waterfront and a large part of the city south of Yesler Way as described.

Again, the easier grades obtainable for a few streets west of First Avenue, would not greatly affect the situation, except along a part of that avenue. We would still have to contend with the existing grades on First, Second, Third and Fourth Avenues, all of which can be more efficaciously done by building an incline (funicular) railway from Railroad Avenue up to First Avenue on Virginia Street, as described later.

After much study of all the conditions, it seemed better to seek a comparatively inexpensive solution of all complications presented to Railroad Avenue but which would answer every purpose for a long term of years, or until the waterfront should be moved westward, when plans can be devised to meet the conditions arising at that time.

In connection with a plan that was once suggested for a temporary overhead street on the avenue, between Yesler Way and University Street, it was understood that the railways were willing to remove two of their tracks from the avenue in order to provide room for inclined roadways from the proposed overhead street to the level of the tracks and piers on the avenue. There seems no doubt of their willingness to give up two tracks, and relay their remaining tracks thirteen feet centers instead of the present fifteen feet centers, and also shift the tracks serving the piers somewhat to the west, or to a line whence to the piers the curves would generally conform to a radius of 193.18 feet. They would also rearrange their tracks on Whatcom Avenue, as outlined on Map No. 19. Having done all this with the purpose in view of leaving a clear roadway for street traffic along Whatcom and Railroad Avenues, the conditions would be as follows:

By reference to Plate No. 19, it will be seen that on the east side of Whatcom Avenue there will be a street one hundred thirty-one feet wide in the clear; on the easterly side of Railroad Avenue from Whatcom Avenue to Yesler Way a street varying in width from fifty-five feet to eighty-five feet in the clear. This street is crossed diagonally by two tracks at Railroad Way, to give the Great Northern and Northern Pacific access from their yards to the tracks serving the waterfront. These Railroad Way tracks are, in turn, crossed by two diagonal tracks for switching movements. The street is also crossed by two tracks from east to west side, near Connecticut Street, permitting Columbia and Puget Sound trains to reach their terminal, and the switching of Northern Pacific and Chicago & Milwaukee cars between the Colorado Avenue tracks and the waterfront. There is also a single Northern Pacific track crossing Railroad Avenue from its Colorado Street yard to the rear of industries located on West Massachusetts Street.

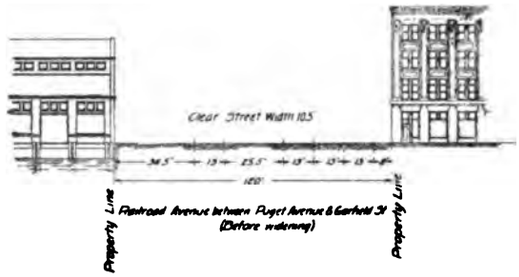
In the course of time a number of these crossings, or at least the move-

Municipal Plans Commission
of the
City of Seattle.
Map Showing
Proposed Location of Railway Tracks
in
Railroad and Whatcom Avenues

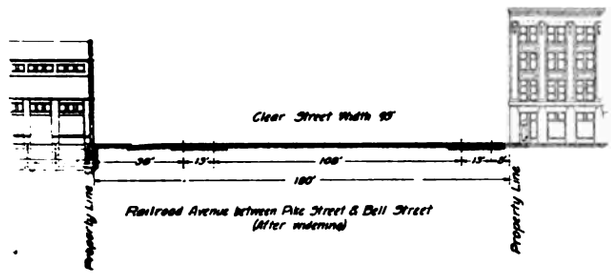
Scale
0 10 20 30 40 50 60 70 80 90 100 Feet.

September 1911. Virgil G. Bogue, Engineer.

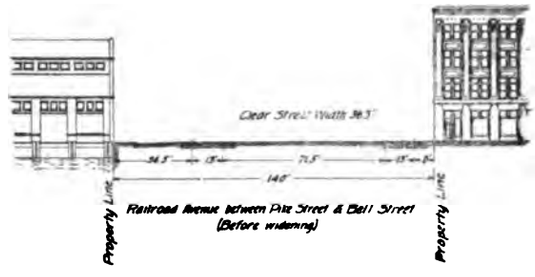
Railroad Avenue between Bell Street & Garfield Street
(After widening)



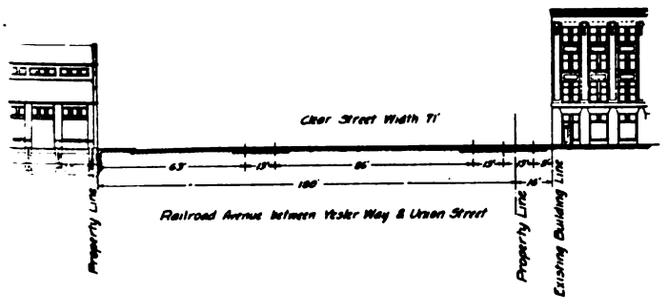
Railroad Avenue between Puget Avenue & Garfield St
(Before widening)



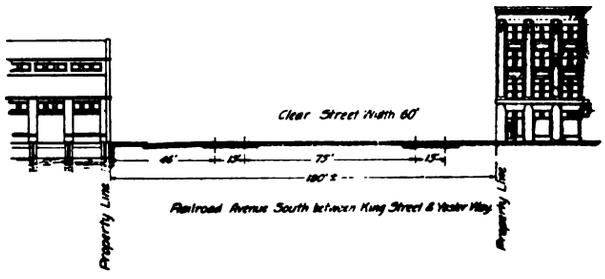
Railroad Avenue between Pike Street & Bell Street
(After widening)



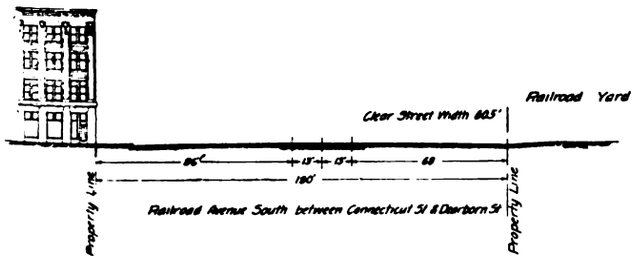
Railroad Avenue between Pike Street & Bell Street
(Before widening)



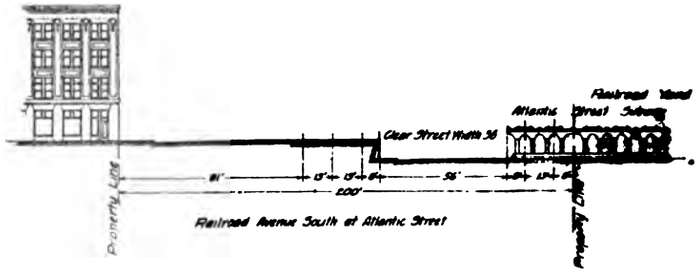
Railroad Avenue between Yesler Way & Union Street



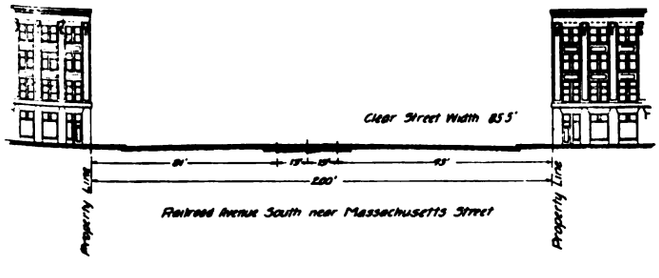
Railroad Avenue South between King Street & Yesler Way



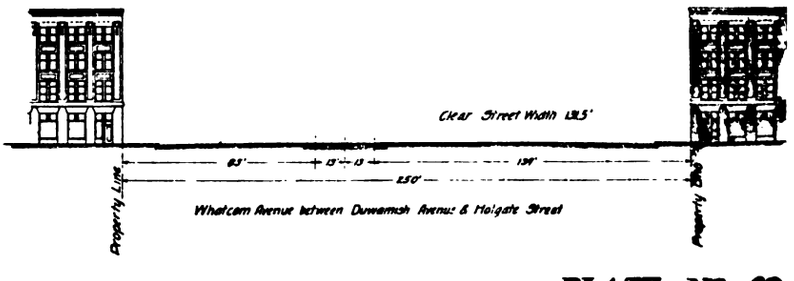
Railroad Avenue South between Connecticut St & Dearborn St



Railroad Avenue South at Atlantic Street



Railroad Avenue South near Massachusetts Street



Whatcom Avenue between Duwamish Avenue & Holgate Street

PLATE NO. 19

ment over them, will be diminished by a more general use of tracks leading from Duwamish Avenue into Whatcom Avenue direct to the west side of Railroad Avenue.

At the present time there are four tracks on Railroad Way, but the railways are willing to remove two of them. The Great Northern and Northern Pacific, under their franchises relating to Railroad Way, are obligated to build a street traffic bridge over their tracks when the necessity arises and demand therefor is made by the city, so that the grade of the street may be separated from that of the tracks. The cost of such structure, plus frontage damages, would be serious, and when demand for separation of grades is made the railways will, beyond question, abandon the use of these tracks and rely upon the Whatcom Avenue tracks from Duwamish Avenue. (See Map No. 19.)

From Yesler Way to Pike Street, five tracks are provided, two on the west side serving the waterfront, and three on the east side. The most easterly track of the three is located on Northern Pacific property to serve the produce houses in that vicinity. There remains a clear roadway seventy-one feet wide for street traffic.

From Pike Street to Bell Street four tracks are provided, two on either side.

From Bell Street to Smith's Cove, six tracks are provided, two on the west side and four on the east side, two of the latter being for running tracks north of the northern tunnel portals, and two for serving existing or future industries.

The avenue from Pike Street to Seventeenth Avenue West has a varying width from one hundred twenty feet to one hundred eighty feet, but should be widened to one hundred eighty feet throughout.

After the widening has taken place and tracks have been shifted to their proper positions, there will remain ninety-three feet of clear street between Pike Street and Bell Street and sixty-seven feet of clear street between Bell Street and Seventeenth Avenue West.

Before the widening has taken place, it is feasible to attain a clear width of fifty-six and one-half feet from Pike Street to Bell Street and from Bell Street to Vine Street, a varying width of from thirty feet to sixty-seven feet, but, from Puget Avenue to Seventeenth Avenue West only ten feet of clear roadway could be had. The necessity for widening the avenue to its full width of one hundred eighty feet throughout its whole length is plain.

All widening of the avenue mentioned should preferably be on and along its west side.

The tracks on Whatcom and Railroad Avenues, having been rearranged as above outlined (see cross sections on Plate No. 19) will provide all needed railway facilities for many years, although in time some congestion may be looked for.

It will be seen (see Maps Nos. 9 and 19) that both on Whatcom and Railroad Avenues the plan provides a street substantially clear of tracks, other than the crossings described, all the way from Spokane Street to Smith's Cove.

When, in the future, it shall become imperative that greater width of clear street be had, the tracks on the east side of Railroad Avenue should be elevated on a permanent structure so designed as to permit the free movement of vehicles and pedestrians beneath it. This will give ample street room for

an indefinite time, and after the readjustment of the waterfront the elevated tracks will continue to serve the east side of the avenue.

The subway planned for Atlantic Street (see Separation of Grades on the Tide Flats, Map No. 19) will have its west portal at the east line of Railroad Avenue. The inclined approaches to this portal are to be along Railroad Avenue, one from the north and one from the south, at an angle of about seventy-three degrees with the center line of the subway and with descending grades of two per cent, more or less, as may be hereafter determined. The clear width of these approaches is fifty-six feet. It is designed that they should be used not only for approaching the subway but also for the traffic north and south along Railroad Avenue, thus avoiding crossings of spur tracks along the west side thereof.

The north portal tunnel grade of the Oregon-Washington Railway & Navigation Company, when built, should be fixed at an elevation which will give easy grade connections thence to tracks on the east side of Railroad Avenue, whether elevated or at street grade; also, when the tracks on the east side of Railroad Avenue are elevated, the tracks of the Great Northern from the north portal of its tunnel northward to the avenue will necessarily have to be adjusted to the new conditions. It is believed, however, that many years will elapse before the tracks on the east side of Railroad Avenue will necessarily have to be elevated, especially that part of the avenue from Pike Street northward.

Some shifting of the tracks, which, on this plan, will necessarily cross Railroad and Whatcom Avenues, as previously mentioned, will at that time have to be made to suit conditions then existing. This relates to connections between elevated tracks and tracks at street level, as well as to conditions which may hereafter arise, but which cannot now be foreseen.

When the tunnels from the tide flats to Central Station are built, it should result in the practical abandonment of the running of schedule trains on both Whatcom and Railroad Avenues, except those of the Columbia & Puget Sound Railway, which may continue to occupy a short section of Railroad Avenue in connection with its terminal. In other words, at that time five tracks on the avenue north of Washington Street should be sufficient.

It should be noted here that, at the present time, schedule trains are not permitted to run on the avenue between Railroad Way and Bell Street during the day time, and that when the plan, as outlined, is in effect, the tracks on both Railroad and Whatcom Avenues will be devoted altogether to switching, with the exception above mentioned.

Switching operations are far less dangerous than those of schedule trains, but when the switching on the east side tracks become perilous, they can be largely confined to night service. Gates can also be installed at the foot of cross streets, and, ultimately, the tracks themselves can be elevated, if necessary, as mentioned.

An ideal plan for Railroad Avenue will not be feasible until many years hence, when the Central Waterfront is moved westward. The opportunity will then come of introducing features which will be ideal and permanent, and which will include park areas, a formal architectural water gate, etc.

When surrendering portions of their rights of way on Railroad Avenue and Railroad Way for the accommodation of street traffic, the railways will natur-

ally, and with justice, insist that new franchises for competing railways shall not be granted along the areas or strips which may be released.

On the other hand, the city should require that the tracks remaining on the avenue be for the common use of all steam railways.

When Elliott Place (the diagonal street connecting Western Avenue with Elliott Avenue between Lenora and Bell Streets) and Magnolia Way shall have been improved, access to the waterfront and Railroad Avenue will be provided as follows:

King Street, maximum grade to Third Avenue South, 0.5%.
Jackson Street, maximum grade to First Avenue South, 3.6%.
Washington Street, maximum grade to First Avenue South, 4%.
Yesler Way, maximum grade to First Avenue South, 4%.
Columbia Street, maximum grade to First Avenue South, 10.9%.
Western Avenue, maximum grade to Virginia Street, 4.9%.
Elliott Avenue and Elliott Place, maximum grade to Pike Place, 4.5%.
Magnolia Way, maximum grade to Denny Way, 2.1%.

There are heavier grades on First, Second, Third and Fourth Avenues south of Virginia Street than upon certain streets leading east from Railroad Avenue to these avenues. These avenues must therefore be reached chiefly from the north through Magnolia Way, Elliott Avenue, Elliott Place, Western Avenue and Pike Place.

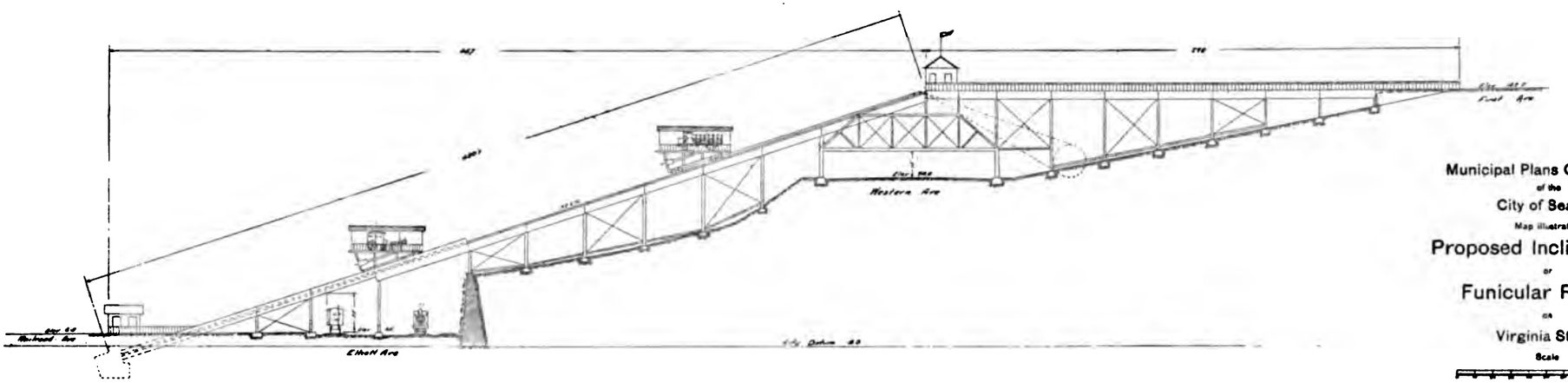
A team will haul, on a continuous three per cent grade, only thirty to thirty-five per cent of the weight it will haul on a level.

In other words, if there is a certain tonnage to haul from the waterfront to points on the avenues mentioned, from three to five times as many trips of a team are necessary, in so far as weight is concerned, as would be required if the streets were level. The effect of this is to greatly increase congestion, with its resulting wear and tear on pavements, in addition to the exorbitant cost of cartage per ton.

It is obvious that some method should be found, if possible, which will make a radical improvement in these conditions. This method exists, beyond any doubt, in the inclined (funicular) railway, or inclined plane, already referred to. Inclines of this character have been used in several cities in Europe for many years. Pittsburg, Pennsylvania, where seven or eight of them are in operation, is the most notable example in this country.

The profile view of such a railway, as shown on Plate No. 20, is designed to meet conditions on Virginia Street, from the foot of the street at Railroad Avenue to its intersection at First Avenue, whence along Pine and Pike streets the avenues can be reached on nearly a level haul, there remaining only a few blocks in the whole business area of the city where an upgrade would have to be faced.

Such an incline would have two tracks and cars, operated by cable and electric power, one going down while the other goes up, and each car to carry two large teams, and passengers, also, if desired. It would be simple and effective in its operation and would doubtless save enough in street wear, to say nothing of the annoyance of congestion caused by heavy teams and trucks, to pay the expense of its operation. Its installation cost would be between $125,000 and $150,000.



Municipal Plans Commission
of the
City of Seattle.
Map illustrating
Proposed Inclined Plane
or
Funicular Railway
on
Virginia Street
Scale

September 1911 Virgil G. Bogue, Engineer

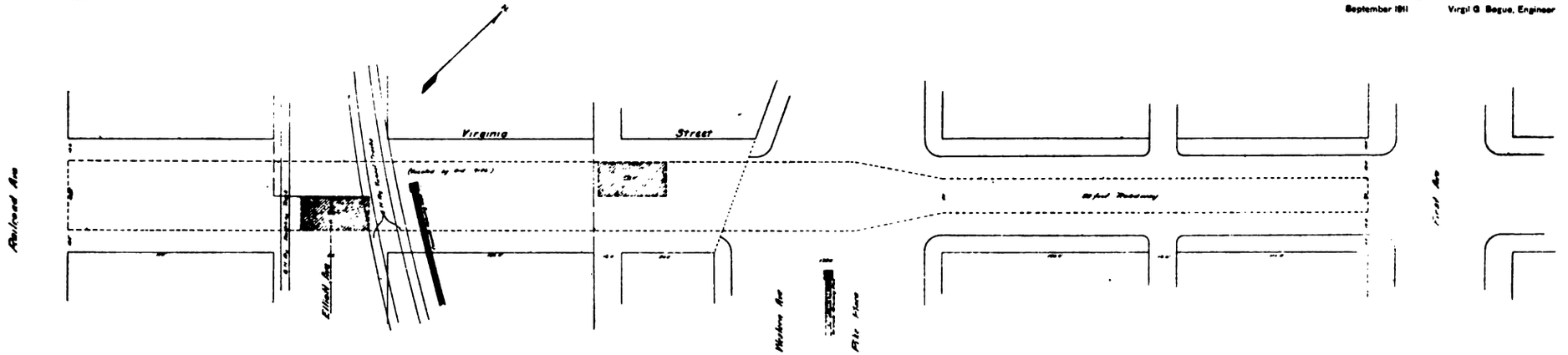


PLATE NO. 20

Several of the Pittsburg inclines were built by Diescher & Son, Pittsburg, Pennsylvania, who have furnished vanuable information touching the cost of their construction.

If one of these inclines is built at Seattle, it will be successful, and the building of several others will follow. Two could be built at West Seattle, one on the extension of West Spokane Street up the hill, and another near West Wait Street, about four thousand three hundred feet south of the ferry slip.

Investigation should also be made to determine the feasibility of such inclines to surmount several other hills in the city, notably Queen Anne Hill, Beacon Hill, First Hill and Capitol Hill.

SEPARATION OF GRADES ON THE TIDE FLATS

The tide flats east of the margin of the East Waterway and north of Duwamish Avenue comprise an area of 1,450 acres, streets included, occupied to a large extent by the local freight and passenger facilities and yards of the railways. There are extensive areas, however, outside of and between railway properties which, owing to their proximity to the business center of the city and accessibility from the railways and waterfront, have great value for manufacturing, storage and wholesale business.

The tracks, properties and franchises of the railway companies extend north and south and spread out east and west, substantially parallel with each other, leaving certain avenues between them unobstructed. In common with other parts of the city, the street traffic is mostly north and south. The time is at hand, however, to plan the separation of grades so as permit of east and west traffic.

It was at one time proposed that certain avenues and streets be elevated to a level which would permit railway trains to pass freely beneath them at any point, the clear head room between tracks and elevated structures to be not less than twenty-two feet. A condemnation ordinance was adopted by the city council, but subsequently repealed, which would have established this plan. As a consequence, at this date, no general plan for separation of grades exist.

The cross-town streets which it was proposed to elevate were Connecticut, Holgate, Lander, Hanford and Spokane Streets. Among the north and south avenues to be elevated were Fourth, Sixth, Eighth and Ninth Avenues South, and part of Seattle Boulevard and Whatcom Avenue.

The original plan for elevated streets did not extend south of Spokane Street, but the later construction of the Argo railway yard and of the proposed Duwamish Waterway would have made necessary an extension of the plan further south.

This plan has been studied in detail and has been found to present many complicated situations. Its cost with permanent materials seems prohibitive.

Wherever streets were elevated we would have basements of one or two stories, aggregating a height of not less than twenty-five feet which, being below the street level, would be dark and unwholesome during the winter. In other words, in order to improve these properties, the buildings would have to be brought to an elevation of twenty-five feet above ground level before reaching the street where ordinary business would be transacted.

Assuming, however, that only certain streets were raised, there would arise a demand for street communication between the basements mentioned and those situations where streets were not elevated. This demand would have to be met to a reasonable extent by paving, etc., on the ground level below elevated structures, so that the final outcome would be, to a great degree, streets of two stories, one on the ground level, the other on the elevated structure. Many inclined roadways would also be necessary to enable those located on streets below elevated level to reach the latter, resulting in extensive damage to property frontages.

The outcome, in a long term of years, might be the elevation of all the streets. But meantime, the paving of streets on the ground level and the building of inclined roadways to upper level would have to be provided for, at least to a great extent, in justice to property holders who could not afford to wait for the opportunity to improve their properties, and also because the space will be required by business growth of the city. It all amounts to this, that once fairly embarked on the elevated street plan, the city might look forward to the outlay of great sums by all concerned, amounting in the aggregate, damages and all included, to not less than $23,000,000, with the possibility that even this amount would not suffice.

The problem of the separation of grades has been satisfactorily worked out in many eastern cities. The outcome generally depends, in the ultimate analysis, on topographical features, because cost is, in the main, dependent upon them. It is desirable, of course, that tracks and streets should both be in the open air. In most cases track elevation is found to be, by far, the best solution.

At Chicago, where there has been more track elevation than in any other city, the result has been so satisfactory that the railways have begun, of their own accord, to make applications for the privilege of extending the improvements into the suburbs. (See Plates Nos. 21, 22, 23 and 24.)

In a case like that of the Pennsylvania Railway at New York, where the track level is kept low by the necessity of a tunnel under a stream, the only solution may be found in having the tracks below street level, at least for a short distance.

The New York Central, in its approach to the Grand Central Station in New York, is elevated at the Harlem River end, but is in a subway at the south end, all due to topographical requirements as affected by limiting grades and other conditions.

The only reasonable, in fact the only feasible, solution of the problem at Seattle appears to be that of elevating the tracks. (See Map No. 19.)

This is provided for by raising the running tracks and certain yards by filling, and by bridging across and over such streets as are to remain open, these streets being in some instances depressed a few feet where they cross beneath the tracks or railway yards, by the introduction of grades of two to four per cent, in order to lessen the height and consequent expense of retaining walls, fills, etc., pertaining to the raised tracks, etc. The streets under these bridges are usually termed subways.

In work of this kind, it is generally necessary, as preliminary to the construction of permanent bridges, to use pile or frame timber trestles for a time. Where these trestles are well built of good timber, there is no essential reason why they should not remain in use for a few years until the life of

the timber is gone, although it is preferable, on some accounts, to replace them with permanent work at a comparatively early date.

The lengths, widths and heights of subways and the precise location of their center lines should be determined by conference between city and railway authorities, when the time arrives to prepare plans for actual construction. It is obvious that the width of a subway can be safely less than the general width of a street passing through it. In a subway teams do not back up against or stand alongside the curb, and there being no shop windows, crowds do not collect. A subway forty to sixty feet wide has a capacity equal to, if not greater, than an eighty-four foot street in a business district.

The map locates subways on Atlantic, Holgate, Lander, Hanford and Spokane Streets, Seattle Boulevard, Ninth Avenue South and Lyons Street, also at the Argo yard. All other locations of subways shown upon the map should be considered tentative and dependent on future developments, but it is assumed here that the number of subways indicated will be sufficient for any probable growth or development except as may be required by new franchises.

Plans for subways generally provide for supporting columns on each curb and at least one line of columns in the center of the street, dividing the traffic to the right and left. In the few cases where wide subways have been built, two and even three sets of supporting columns have been permitted in the roadway, in addition to those at the curbs.

The minimum height of a subway will always depend upon the use which is to be made of it. Where it is a matter of ordinary street traffic, twelve feet has been found ample, but where a street car line is to be provided for, fourteen feet answers all purposes.

It is not necessary that subways be built to provide crossings at all streets. On the contrary, a subway once in three to five blocks has generally been found, in Chicago and other eastern cities, to be more than sufficient for all the needs of traffic.

The plan does not propose that industrial tracks shall be elevated except in instances where, as in the case of the Colorado Avenue yards of the Northern Pacific, it is thought desirable to retain two such tracks along one side of the property. When the other tracks of this yard are removed, as they will be by the time the Auburn yard is in full operation, the property not occupied by the two tracks mentioned will thereafter doubtless be leased for industrial purposes and remain at the level of Whatcom Avenue, while the two tracks mentioned will be elevated, there being elevated running tracks on Colorado Avenue adjoining them on the east. It may be found desirable, as in the case of the industrial tracks each side of the Oregon-Washington Railway & Navigation Company running tracks on Fifth Avenue, or in similar locations, to do likewise, depending on circumstances that cannot now be predicted.

The various sections of the flats that are not occupied by the railways are areas to be devoted to manufacturing, wholesale business, storage, etc., especially of heavy productions, and the service tracks required therefor should be at ground level. Switching on industrial tracks presents but little peril, but when for any reason it does become dangerous, it should be largely or wholly carried on at night.

There can be no serious objection to a single industrial track on the east side of Utah Avenue, another on the west side of Occidental Avenue and still

another on the east side of Oriental Avenue. If more tracks are essential in these cases, the right of way for them should be provided by the property which they serve, or otherwise these avenues where this necessity arises should be widened. However, generally speaking, industrial tracks should be confined to alleys running north and south. Franchises for such tracks crossing avenues anywhere between King Street and Duwamish Avenue and east of Whatcom Avenue, should not be granted unless they are to be elevated at least at the crossings. The main avenues, namely, First, Fourth, Sixth, Eighth and Ninth Avenues South, not now occupied by tracks, will all be needed for street traffic. They are the only wide streets remaining to accommodate the vast north and south traffic of the future and should be kept clear of all tracks that are not elevated, those required for street car or rapid transit service excepted.

Spokane Street track should remain in use until track elevation in its vicinity is about to be undertaken, when the railways should be given the option of elevating it, or removing it and depending on Duwamish Avenue tracks to perform its functions.

The plan provides for the elevation of the Argo yard with subways on Whatcom, First, Fourth and Eighth Avenues South. The lengths of these Argo subways, however, will depend on the area of yard which is to be occupied by tracks. It seems possible that the railways will find it advantageous to establish there a joint yard in connection with Harbor Island and west side tracks.

South of the Argo yard and thence to Black River, the running tracks are all close under the slope of the hill on the east side of the valley and will be crossed here and there, as elsewhere described, by short overhead bridges, to provide for street connections between streets of the valley and those of the high ground east of the tracks.

That part of the so-called shore line track, property of Northern Pacific Railway, devoted to industrial service, now located on Ninth Avenue South, between Lyons Street and Hanford Street, a distance of three blocks, should cross Ninth Avenue South by introducing sharp curves, so as to make the crossing of the avenue shorter. (See Map No. 19.) This track should be elevated at this crossing, and Ninth Avenue South should be somewhat depressed so as to provide part of the head room for a subway. Ninth Avenue South, from Winthrop Street to Hinds Street, a distance of three blocks, should be widened to one hundred feet, to accommodate the future traffic, not only of Ninth Avenue South, but also that of Seattle Boulevard. The above is in line with the proposition referred to that no tracks should be permitted to cross the remaining main avenues at street grade. If it becomes necessary to grant such franchises, they should provide for elevation of tracks coincident with the elevation of other tracks in the vicinity or with which they may be connected.

In connection with the street elevation project, it was formerly proposed to make Connecticut Street the first elevated cross street south of the passenger stations. This street, however, is not far enough south for subway crossing purposes. The tracks and yards south of the passenger and freight stations are to be raised, but it would be hardly feasible to raise the stations themselves, with their tracks, which, to a degree, are held down by street grades and tunnel portals.

As a consequence, the first crossing of the tracks south of the stations must be far enough south to leave distance for permissible grades from track level at top of subway, when built, down to the station facilities mentioned. Atlantic Street is the first street to the south where this condition exists.

Note should be made here of two situations relating to Atlantic Street subway between Railroad and Utah Avenues. First, a clear width of fifty feet is deemed sufficient for this subway. On account of local conditions a greater width is not easily attained. Second, at the southeast corner of Utah Avenue and Atlantic Street the double tracks of Seattle Electric Company curve from Atlantic Street into Utah Avenue, where they unite in a single track leading south to the repair shop. It would be just as well if there was but the single track around the corner instead of two tracks, and the Seattle Electric Company will be willing to make this change, placing the switch near First Avenue South. This will improve conditions approaching the incline to the subway from the east.

The north and south inclines leading to Atlantic Street subway are indicated as fifty-six feet wide, because street traffic along Railroad Avenue will have to pass along through them.

Also at Whatcom and Dakota Streets, the tracks should be kept as low as practicable to give the tracks leading to Harbor Island the easiest possible grades, because in time heavy trains of freight will be hauled to and from the Island and the west side.

As above indicated, the Northern Pacific will in due time remove most of its Colorado Avenue yard. It is a safe prediction that parts of other railway property, instead of being raised and used for tracks, will be leased to industries. This, however, is a matter which belongs to the railways, and which will be determined by them.

Material necessary for the filling required by track elevation may be obtained, from time to time, from such regrades within reasonable distance of the flats as the city may be called upon to undertake, or may be hauled in cars from excavations made along the rights of way of the different railway companies.

Tentative estimates have been prepared of the cost of elevating the tracks, but obviously such estimates can only be definitely made when the time arrives for undertaking the work. The expenditures required of the railways will altogether ultimately amount to eight or nine million dollars. This, of course, should be spread over a term of years, as may be arranged between the city and the railways.

It is proper to remark that the representatives of the engineering departments, both here and in the east, who have been consulted with and who have to do with this subject for the several railways, were formerly somewhat of the opinion, as was the writer, that the streets and not the tracks should be elevated, but this opinion was only general and tentative in its character. In no case had occasion arisen for thorough investigation of the merits involved. But now, after having followed in detail the studies made in behalf of the Municipal Plans Commission, and having had time to consider the matter, we are all in full accord with the conclusions reached and stated above.

In view of the existing financial depression the railways would naturally consider it a hardship were they compelled to begin the work of track elevation at an early date. Furthermore, preparation of plans, conferences between city and railway officials, etc., will consume much time.

When the work begins it should go on progressively, year after year, and from north to south; that is, the first subways built should be those on Atlantic Street; the next, Holgate Street, and so on, one after the other, as development, or rather necessity, requires.

The sums to be expended are large and will increase the burden carried by the railway companies. They are justly entitled to plenty of time in making these investments.

On the other hand, the development of the property is a business necessity to its owners, and the railways will, incidentally, be greatly benefited thereby.

It is here deemed fair to say that actual work of track elevation should not begin before September 15, 1913. This will give approximately two years to preliminaries.

It is not easy to name a date when the work should be completed. It depends upon the prosperity of the city and the railways and the growth of business enterprises on the flats. It is a matter which should be left to the future and the fair and reasonable consideration of the merits of the situation as then presented. It is altogether probable that when a considerable part of the work has been completed, the railways will prefer to finish the balance promptly and thus get it out of the way.

STEAM RAILWAYS

Topographical conditions led existing railways to enter Seattle either from the north or south. The same conditions preclude the entrance of new roads by other than practically the same general routes.

Intelligent planning requires quite thorough study of the railway possibilities as an aid to the prediction of what will occur in case new railways seek to enter.

The problem of the entrance of new railway lines into the city may, from a general point of view, be divided into three sections:

First: Routes for railways desiring to enter from the south.

Second: Routes for railways desiring to enter from the north.

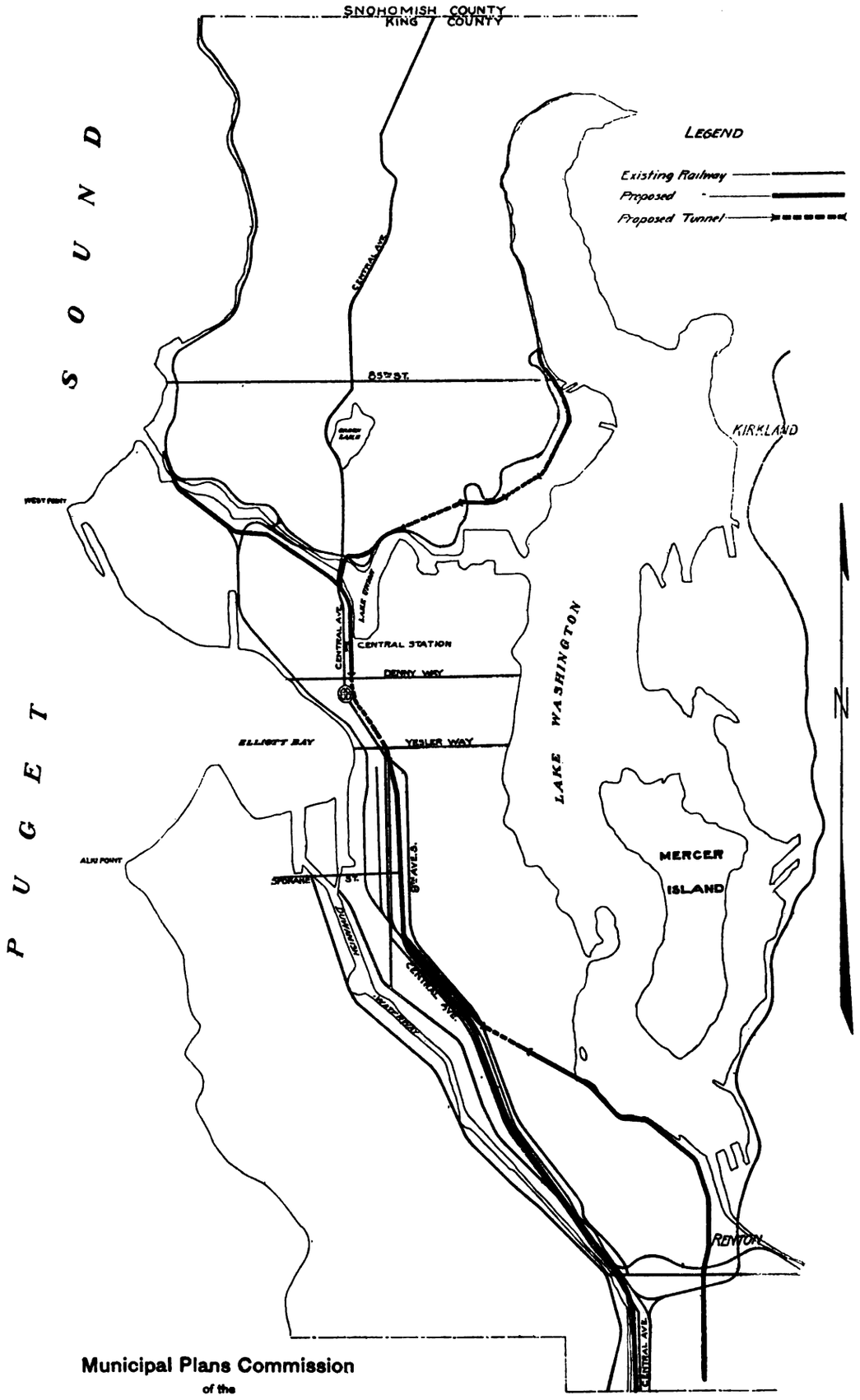
Third: The location for an ultimate union passenger station, herein referred to as Central Station, where all the lines may conveniently converge.

These sections will be considered as follows:

FIRST: ENTRANCE FROM SOUTH. There are two routes open to a railway seeking entrance from the south. One is parallel with existing lines north of Black River Junction, and the other by way of Renton and Rainier Beach. (See Plate No. 25.)

Two arterial highways have been laid out, one on each of the existing railway rights-of-way between Black River and Argo Junction. The distance between these two highways varies from 800 feet to 1,800 feet, thus leaving a strip of sufficient width to accommodate all the lines that will seek an entrance by this route. Main line tracks should be confined to the space between these two arterial highways, because such arrangement will least interfere with the industrial development of the valley, and will greatly simplify the grade separation problem.

Tracks that may be located on the marginal ways paralleling Duwamish Waterway, should be confined to serving waterfront and industrial proper-



Municipal Plans Commission
of the
City of Seattle

Suggested Railway Approach
to
Proposed Central Station

Scale

4000 3 2 1 0 4 8 12 16000 Feet

September 1911. Virgil G. Bogue Engineer.

PLATE NO. 25

ties. Franchises for tracks on marginal ways should not be granted without reserving common user or joint ownership rights for the railways that may desire to enter that territory. Preferably they should be built, owned and operated by the Port of Seattle, so as to give all railways equal access to the districts served thereby.

A railway desiring to enter by Rainier Beach route should follow a northwesterly direction adjacent to the southerly and westerly side of the proposed marginal way along the southwesterly shore of Lake Washington to Rainier Beach, thence continuing in a northwesterly direction to a possible connection with a Dunlap Canyon line in the vicinity of the center of Sec. 28, T. 24 N., R. 4 E. A tunnel approximately 4,600 feet long will be required in passing thence beneath the south end of Beacon Hill to the Duwamish Valley. A new road entering by this route would then either have to obtain trackage rights from the existing railways, or work its way along the east side of the Oregon-Washington Railway & Navigation Company's right-of-way to the property between Sixth and Eighth Avenues South, in the vicinity of Connecticut Street. From this position a connection could be advantageously made by tunnel through to the south end of Lake Union.

Either one of these schemes would involve expensive condemnation and difficult work, but both are feasible. A railway entering via Rainier Beach, as suggested, upon tunneling beneath the south end of Beacon hill, would have the alternative of working north along the east side of the present rights-of-way, which would involve heavy cutting, or crossing over existing tracks and coming down to the west of them. In the latter event, heavy grading would be avoided, yet in order to reach the freight terminal lands available near Connecticut Street referred to, a long and expensive recrossing of all the existing lines would have to be made.

New railways entering as outlined may, of course, gain access to the waterfront by condemnation. A better way, however, would be by the use of the Port of Seattle tracks on the marginal streets and by acquiring common user or joint ownership rights in existing tracks.

Through Dunlap Canyon a railway connection may be had between the tracks in the Duwamish Valley and the Rainier Beach route, in the vicinity of Cloverdale Street and Forty-sixth Avenue South. From thence a line may be extended north through the Rainier Valley. From the vicinity of Morgan Street and Forty-second Avenue South, to the vicinity of Angeline Street and Thirty-seventh Avenue South, a tunnel about 5,300 feet long would be required, the grade being four tenths per cent. This tunnel would be much shorter, if a steeper grade were used. From the latter point the railway may extend northward, along a line a little easterly of Rainier Avenue, to Holgate Street, or possibly further.

SECOND: ENTRANCE FROM NORTH. The country north of Lake Union and the Lake Washington Canal has been studied with a view of ascertaining by what routes new railways may gain entrance from the north.

It was found, that, while it is feasible to construct lines over the upland between Lake Washington and Puget Sound, such routes would not be satisfactory on account of the heavy work that would be necessary and the poor grades obtainable. There appears to be no reason, however, why another railway cannot be built from Seattle northward, following closely the route of

the Northern Pacific line along the west side of Lake Washington and via Maltby Summit, over which a maximum grade of eight-tenths per cent is obtainable. Along the west side of the lake, between Pontiac Bay and McAleer Creek, while the slopes rise abruptly from the shore, there should be no great difficulty encountered in widening to accommodate a second, or even more, tracks.

In case another railway seeks to enter Seattle from the north, it is probable that much the same thing would happen as occurred between Seattle and Portland, when the Oregon-Washington Railway & Navigation Company decided to build north to Seattle. The new road effected a combination with the Northern Pacific to come in over its lines under an arrangement by which a second track was built. Even if this is not done an improvement and straightening of existing lines is necessary.

A new alignment from Pontiac southwesterly may be obtained with a maximum grade of seven-tenths per cent. In the south half of Sec. 10, T. 25 N., R. 4 E., a tunnel about 3,000 feet long will be required. From the westerly end of the tunnel the route should be westerly approximately along the line of East Forty-fifth Street, to a crossing of the old Northern Pacific Railway line, thence southwesterly through a tunnel approximately 4,800 feet long, emerging in the vicinity of Northlake Avenue and Ninth Avenue Northeast, thence westerly along the north side of Lake Union to the vicinity of Woodlawn Avenue, thence by bridge to a connection with the proposed Central Station tracks.

Under a similar arrangement a combination might be made with the Great Northern by which another railway may obtain running rights over its coast line, thus entering Central Station by way of Salmon Bay.

A new entrance to the city has been worked out by the Great Northern via the crossing at Salmon Bay Narrows in the vicinity of Thirty-fourth Avenue West, and thence southeasterly to a connection with the Interbay tracks. Connecting with, and in conformity to this new arrangement, a line may be constructed easterly skirting the north side of Queen Anne Hill to Central Station. From Roy Street northwesterly an average upgrade of thirty-two hundredths per cent will carry this proposed main line over the highways and freight and yard tracks at the north end of Interbay district, as shown on Map No. 11.

Under this arrangement the tracks on the Ballard side should be devoted principally to industrial switching purposes in which event two running tracks along the north side of Salmon Bay will be sufficient.

A new railway entering via the Great Northern coast line may reach Lake Union over tracks either on the north or the south side of Salmon Bay. In the former event there will be introduced serious grade separation problems and the probable necessity of additional running tracks.

THIRD: CENTRAL STATION. Summing up the situation, it appears that the desirable avenues of railway ingress and egress are three in number and are so located that they form a huge Y, the branches of which may be described as follows: (See Plate No. 25.)

(1) The Great Northern route, via Salmon Bay and easterly side of Puget Sound.

RINN ST. SUBWAY EVANSTON ILL. PLATE NO. 23

STEEL SUBWAY AT KINNICKINNIC AVE. MILWAUKEE. WIS. PLATE NO.24

(2) The Northern Pacific route, north along the west side of Lake Washington.

(3) Any line entering over the south tide flats, produced northward to Lake Union.

These three principal routes intersect on the southwest side of the Lake Union Basin, which practically determines the location of the Central Station, where sufficient area may be had to accommodate all the roads and allow for future growth. Investigation demonstrates that the requisite area may be made available and that the proper location for the station is at Roy Street and Central Avenue.

Not the least attractive feature of this location is that the station would be on Central Avenue, the axial highway of the city, and be virtually part of the Civic Center.

It would be especially advantageous to the great population which will eventually live along the shores and territory adjacent to Lakes Washington and Sammamish. These people will come to the Lake Union landings in motor boats, ferries and lake steamers and disembark in the near vicinity of Central Station.

The three routes leading to the proposed Central Station have been so planned that it will be feasible to eliminate all grade crossings along the main lines through the city. (See Map No. 12.)

One of the most important results to be obtained by the establishment of Central Station near Lake Union, and in the construction of tunnels from the tide flats leading thereto, will be the elimination of substantially all schedule trains from Railroad Avenue. The safety of the public, the appearance and prosperity of the waterfront, and the well-being of the city at large, depend greatly upon the adoption of this plan.

The construction of Central Station at Lake Union by the existing railways will not mean an abandonment of their present passenger stations, for these will be required to accommodate the south end. Furthermore, the railways which now have their freight depots, passenger coach and storage yard facilities on the south tide flats, will, of necessity, maintain them there. It is not intended that they be removed to the proposed yards on the west side of Lake Union and the north side of Queen Anne Hill, because the available room there will be needed by the railways coming from the north.

The plans prepared show that in order to provide the area for Central Station it has been necessary to encroach somewhat upon Lake Union. This has been done in order to provide room for future growth of station facilities. The encroachment has been reduced as much as practicable upon the plans, but the fact is that, when Central Station shall have been erected on the site proposed, it will be necessary to encroach still more upon the lake. Even though no Central Station should be established as proposed, encroachment upon the lake would be necessary. The only highway which is available for traffic between the north and south ends of the city, except Eastlake Avenue and Fifteenth Avenue West, is Westlake Avenue, the most central and desirable of the three. This avenue will prove totally inadequate to the needs of the future. When the population of the north side has become half a million, as it will before many years elapse, it will be impossible to accommodate all the travel on Westlake Avenue and it will be necessary to regrade

the east face of Queen Anne Hill, pull down the slope and establish at least two more streets on easy grades, connecting with the bridges at Stone Avenue and Fremont Avenue. This is inevitable and will follow the growth of the city "as the night the day."

It is not expected that the Central Station project will be carried out in the immediate future, but that it will be developed as the city outgrows the present facilities and new railways have to be provided for. It will be essential to new roads from the north. Central Station should be made available to all railways and to that end the city should, in the granting of franchises for the terminal tracks and approaches thereto, insist upon either common user, or, preferably, joint ownership provision.

In connection with the location of Central Station it is important that sufficient room for coach storage and cleaning yards and facilities be provided, preferably outside the station grounds, but conveniently near. Such facilities may be developed on the area between the proposed new main line along the north side of Queen Anne Hill, and Lake Washington Canal from Fremont Avenue to Fourteenth Avenue West (see Map No. 11). The same location would also be convenient and necessary for a general yard, as a center of switching operations, and for the breaking up, or making up, of freight trains.

SINGLE TERMINAL MANAGEMENT: The plans suggesting methods of developing industrial and waterfront property all provide for switching tracks wherever necessary, whether along marginal ways or other streets. It is important that all these tracks and facilities be co-ordinated and operated under one management, serving the entire city and vicinity, for the following reasons:

(1) It would eliminate the duplication of trackage and terminal facilities.

(2) It would be an economic advantage to the community as a whole in the reduction of the amount of land used for yard purposes, and the land thus released would, in most cases, be desirable business or industrial property.

(3) It would simplify and reduce the cost of operation.

(4) It would greatly facilitate prompt delivery of cars.

(5) It would make of the port and the city a terminal unit, which should work to the advantage of Seattle's industrial and business concerns, and assist them in competition with other cities.

In case of such terminal management, private or municipal, there are two yard locations which are desirable as parts of the terminal facilities; first, the location referred to on the south side of Lake Washington Canal between Fremont Avenue and Fourteenth Avenue West, the second between Central Avenue, produced, south through the Duwamish Valley and the easterly margin of the existing railway rights-of-way from the vicinity of Kenyon Street to the neighborhood of Black River Junction. In the latter location there may be made available for trackage and yard purposes a strip of land from 600 feet to 1,200 feet wide, and approximately five miles long. More land is also available in the Interbay District.

Sub-freight and passenger stations should be established about the city at convenient points for serving the various local districts.

The number and location of such stations will depend largely on local development of the respective districts they are to serve, consequently the mat-

ter of their definite establishment may be left for determination, from time to time, as the need arises.

RAPID TRANSIT SYSTEM

The unique topography of the site of Seattle, by reason of its surrounding water areas, has made the city one of magnificent distances. There are nearly sixty square miles of land area in the present city limits, which would occupy, in case of a city of generally rectangular area, about seven and three-quarters miles square. Under such conditions a ride of four miles would reach from the outskirts to the probable business center.

In order to include the present sixty square miles of land area, along and between its water areas, Seattle stretches thirteen and one-half miles from its northerly to its southerly boundary, and while only two miles in width from bay to lake along Yesler Way, the site broadens as it goes northward to over eight miles, and towards the south to almost the same breadth.

This hour-glass shape places the largest areas of present and future residence district development at an average of at least fifty per cent further from the city's center than would be the case in a site of equal land area, unbroken by water areas, and generally rectangular in shape. From the outskirts of the present city, in any of its four quarters, it is six or seven miles to the central business section.

The urban transportation problem is complicated by the varied topography resulting from both exterior and interior bodies of water. Hills, which in other vicinities would be dignified as mountains, rise with more or less abrupt slopes from the water's edge to elevations exceeding four hundred feet. Ridges obstruct the routes to large valley districts beyond. The water areas, with their irregular outlines, compel detours and circuits for transportation routes in every direction outward from the city center. These varied natural features are, however, a scenic asset and commercial opportunity of Seattle. They present an unrivaled combination of location and site.

The city's growth will be retarded with a tendency to develop congested, undesirable and unhealthful districts unless rapid transit facilities are provided. Business men, and workers generally, cannot be served by a surface street railway system, over lines stretching out six or seven miles, with stops at every street crossing, consuming from thirty minutes to an hour twice each day. And the more the population increases in these suburban sections over which the city must expand, the more difficult the problem becomes.

This statement of the case applies to the present city area. When we consider the additional ninety square miles covered by this report, it must be evident that the expansion cannot come without rapid transit facilities. Seattle is neither likely to cover another six miles northward nor a like growth southward by the mere extension of surface lines which require almost an hour to carry passengers to the present limits. The development of the district beyond Lake Washington cannot be expected so long as nearly half an hour must be spent in reaching the lake shore. Rapid transit has placed Tacoma, although thirty miles away, within an hour and a quarter of Seattle.

Recognizing that rapid transit must soon be earnestly considered, it has been deemed proper to include in this report some suggestions along this line. The study of the metropolitan area, present and future, with reference to

arterial highways, naturally carried with it the thought and provision for future rapid transit routes. In order to preserve and systematize the results of this study, Map No. 3, illustrating what seem to be desirable rapid transit routes, has been prepared, together with a general description of each route. (See Appendix No. 3.)

A rapid transit system must develop progressively as demands and resources permit; therefore, when the time comes that there is a definite movement to establish rapid transit facilities, either by the city itself or by any corporation duly authorized for that purpose, this plan will be useful only as a basis for careful study of routes.

The proposed rapid transit route from the Civic Center to the Queen Anne section of the city was suggested by Mr. George F. Cotterill, Civil Engineer, long a resident of that neighborhood. (See Route No. 4, Appendix No. 3.)

The Rapid Transit System as outlined would consist of the following mileage inside the present city limits:

Subways	33.00 miles
Tunnels	5.50 "
Elevated	27.40 "
Surface	24.85 "
Total	90.75 miles

There would also be 36.40 miles of surface lines outside present city limits, the probability being that surface lines, wherever found, would generally be rebuilt as either subway or elevated in the course of time.

Any portion of the line which passes through a ridge so deep below the surface that to reach a station established thereon would require elevator service, is considered as tunnel.

YARROW BAY TUNNEL

The future development of the region east of Lake Washington will demand attention to the question of transportation. Ferry service will not wholly meet the needs of the distant future. The area to be served is so large and the benefits so great that the expenditure of an enormous sum of money will eventually be justified in order to place the entire area lying between Lakes Washington and Sammamish within the zone of rapid transit.

A route for such a line is indicated on Map No. 1, leaving the surface from Highway No. 65 east of the lake at a point three-quarters of a mile south of Northup Landing, thence descending for a distance approximately two miles to the east shore of Lake Washington; thence under the lake for a distance of about one and three-quarters miles to its west shore; thence on an ascending grade for a distance of approximately three miles to the intersection of Dexter Avenue and Mercer Street, at an elevation of approximately zero. If desired, this line could curve to the south on Dexter Avenue, reaching the Civic Center loop subway on a grade of about four per cent and permitting a connection with the Central Rapid Transit System.

The gradients required in passing beneath the lake depend on the distance from the lake's bottom down to the tunnel. This could not be fixed without

careful investigation in all possible ways of the character of the material to be encountered, and is the most important engineering problem involved. While this and other problems would present themselves for solution, we are quite safe in assuming that the work as a whole would not be more serious than are other works now contemplated in other parts of the world.

INTERURBAN SERVICE

The existing interurban electric lines should eventually occupy part of the proposed rapid transit system. The line of the Seattle-Everett Traction Company, which now enters the city over Greenwood Avenue, should enter the present city limits preferably in subway at the intersection of Eighty-fifth Street and Fremont Avenue; thence via Fremont Avenue and Arterial Highway No. 9 to Central Avenue, where it will connect with rapid transit system and reach the station at the Civic Center via Central Avenue.

The Puget Sound Electric Railway, which enters the city from the south, should eventually connect with the Rapid Transit System a little north of Black River Junction and continue thereon to the Civic Center with grade not exceeding three per cent.

Local interurban trains will return from the Civic Center to their respective destination—Everett or Tacoma—but through trains will pass through the Civic Center Station, thus establishing a through line between Everett and Tacoma.

STREET RAILWAYS

The location of the important street railway lines is essentially an arterial highway problem, because the advantages in grades and distances that make an avenue desirable for vehicle traffic are usually the principal factors in determining the choice of street car routes.

In the outer districts the street railway extensions will naturally be made along the main highways, so that the solving of the arterial street problem determines the location of street car lines.

In the central portions of the city the problem is complex, requiring special study and the consideration of many factors that must of necessity be taken into account.

A serious phase of the street railway situation arises from the fact that practically all the traffic north and south through the business district is forced into the few available avenues between the waterfront and the brow of the first hill. The rushing congestion during rush hours is even now somewhat acute, so that the question of relief is not a future problem but one pressing for solution at the present time. The immediate improvement of the situation is not so much a question of additional trackage as it is a re-routing problem which requires extensive study, and should be worked out in a spirit of co-operation between the city and the operating companies. Some additional loops in the north and south ends of the business district are needed, the actual locations of which should be based on traffic studies.

The larger problem of future street railway development will be made much easier in its solution by the carrying out of the Civic Center plan and the opening up of the proposed new highways. There is a large area sur-

rounding the Civic Center in which practically all the streets will eventually be available for street car lines, making it feasible to arrange almost any combination of loops that may be needed. It would be difficult at this time to determine in detail just what may be required. The more important improvements are outlined in conformity with the other plans suggested for the city's development.

The street encircling the Civic Center, except that portion on the westerly side between Lenora Street and Bell Street, and the encircled area should be kept clear of street railway lines in order to avoid congestion and noise. The terminal loop may be formed as follows: Beginning at Central Avenue and Seventh Avenue, thence southerly on Seventh Avenue to Ninth Avenue North, produced southerly to Virginia Street; thence westerly on Virginia Street to Third Avenue; thence northerly on Third Avenue and the encircling street to Battery Street; thence easterly on Battery Street to the place of beginning. Adjacent to these major loops, smaller ones can be readily worked out as needed. A cross town connecting line on Denny Way will probably be required.

Through traffic should be diverted to the eastward of the Civic Center by routing cars on Westlake Avenue and Ninth Avenue North produced south to Stewart Street, and with connections westward via Wall and Battery Streets.

There are several principal routes of street railway travel leading into the business center, *i. e.:*

(1) The Interbay, Fort Lawton and Ballard Beach lines entering via the west side of Queen Anne Hill.

(2) The Queen Anne Hill lines.

(3) The Fremont-Ballard and Stone Way or Central Avenue lines entering along the east side of Queen Anne Hill.

(4) The Eastlake-Ravenna and Northeasterly lines entering via Eastlake Avenue.

(5) The hill lines serving the territory between Broadway and Lake Washington and entering via Pike, Pine, Madison and James Streets and Yesler Way.

(6) Jackson Street, Rainier Valley and Beacon Hill lines entering via Jackson Street and Dearborn Street.

(7) Duwamish Valley and West Seattle lines entering via the south tide lands.

The development of the city in accordance with the proposed plans will not materially change these main routes of travel, but a proper utilization of the new highways will make possible a greatly improved street railway system.

For convenience the suggested extensions will be taken up by group numbers.

First: The arterial highway commonly known as Magnolia Way, to be extended from Second Avenue and Denny Way northwesterly to Elliott Avenue and Mercer Street, should be utilized by the lines entering via the west side of Queen Anne Hill, thereby greatly improving the service.

Second: The Queen Anne Hill service is a difficult one, but may be materially improved by utilizing the proposed artery to the top of the hill at West Howe Street and Seventh Avenue West, via a new diagonal street from Fifth Avenue and Denny Way to First Avenue West and Olympic Mall,

thence along Olympic Mall and Eighth Avenue West to West Howe Street. The existing East Queen Anne line should be improved by utilizing the proposed diagonal cut-off between Prospect and Aloha Streets.

Third: The densest street railway traffic in the city will probably be that passing along the westerly side of Lake Union. The replatting suggested in connection with Central Station will help the situation greatly. Under this scheme there will be four streets available for car lines. They should all be utilized as suggested on Map No. 4, in order to reduce congestion to the minimum.

The plaza at Broad and Mercer Streets in front of the Central Station will become an important terminal and transfer point. At that place a comfort station and waiting shelters will be required. In front of the lake boat and ferry terminals at the southwesterly end of Lake Union will be another important transfer point where a comfort station and waiting shelters should also be provided.

Fourth: The widening and extending of Howard Avenue North, making it one of the principal arteries along the east side of Lake Union, will be of great benefit to car service from the northeasterly part of the city. Both Eastlake Avenue and the new highway will be needed to handle the traffic. The cars routed over Howard Avenue North may enter the central district through Fairview Avenue and Virginia Street.

Fifth: It is evident that additional routes must be provided to serve the territory now served by the hill lines, in order to avoid congestion. Olive Street should be utilized by the Bellevue-Summit line and possibly by some other of the hill lines. In case a tunnel is constructed from Union Street and Ninth Avenue, eastward to either the vicinity of Broadway or to Spring Street and Tenth Avenue (see Arterial Highways), provision should be made in it for a street railway line. Such a route will eventually be necessary.

Sixth: The street railway lines from the southeasterly portion of the city are at this time causing considerable congestion in the vicinity of Jackson Street and Fourth and Fifth Avenues South. That this condition will rapidly grow worse, unless relieved, is evident. Fifth Avenue will become available and should be utilized to carry a portion of the street car traffic. The extension of Prefontaine Place, southeasterly to Dearborn Street and Ninth Avenue South, can be utilized to advantage. The proposed arterial highway located to the west of Rainier Avenue, which is to be extended from Twelfth Avenue South and Jackson Street northwesterly to Fourth Avenue and Madison Street, will be an important factor in reducing congestion of street railway traffic in the vicinity of the existing passenger stations. Part of the cars from Rainier Valley and the southeasterly district should be routed over this new street and thence via Fourth and Fifth Avenues into the central district.

Seventh: A street railway line should be constructed on Fourth Avenue South in order to relieve First Avenue of the burden of carrying practically all of the West Seattle and Duwamish Valley street car traffic. Sixth and Eighth Avenues South should eventually be utilized to carry a portion of the Duwamish Valley street railway traffic, as it becomes necessary to relieve First and Fourth Avenues South.

Eighth: A street car line along Highway No. 66 to North Broadway, thence along East Aloha Street to Twenty-third Avenue North, with connec-

tions to Central Station, Taylor and Ward Street and to the Civic Center (see Map No. 4), will much reduce the distances between the Capitol Hill district on the one hand, Central Station, Queen Anne Hill and the Civic Center on the other; at the same time it will greatly relieve the Pike and Pine Street lines.

The growth of Seattle's waterfront business to the magnitude expected, will make a system of waterfront street railway lines a necessity, practically as follows:

(1) A line on the easterly Duwamish Marginal Way.
(2) A line on the westerly Duwamish Marginal Way.
(3) A loop line on Harbor Island.
(4) A loop line on the tideland area west of the West Waterway.
(5) The Alki Point line.
(6) A connection between the above lines and Whatcom Avenue via West Spokane Street.
(7) A line on Whatcom and Railroad Avenues from the easterly Duwamish marginal way to the intersection of Railroad Avenue and Seventeenth Avenue West.
(8) A belt line following the waterfront around Queen Anne Hill via Seventeenth Avenue West, Thorndyke Avenue, Nickerson Avenue and Westlake Avenue, and thence to Railroad Avenue via Broad and Harrison Streets.
(9) A belt line following the waterfront around Magnolia Bluff and Fort Lawton districts from Seventeenth Avenue West, via West Wheeler Street, Joliet Avenue, Logan Avenue, and the proposed marginal way to the intersection of Gilman Avenue extended and Thirty-fourth Avenue West; thence via Gilman Avenue and other streets to a connection with Seventeenth Avenue West.

The suggested changes and the proposed extensions from the Civic Center outward, are shown on Map No. 4.

FERRIES

This subject has been touched upon in a disconnected manner along with the suggestions made for the treament of the waterfront in the various districts. Eventually a considerable proportion of Seattle's population will depend more or less upon transportation by ferries. Consequently the ferry service is destined to become one of importance.

The successful development and operation of the various ferry lines will be of moment to the entire city, and to obtain the best results the ferries should be owned and operated by the Port of Seattle.

The ferry service falls naturally into two main divisions:

(1) Those operating on Elliott Bay and Puget Sound.
(2) Those operating on the lakes.

(1) The principal ferry terminals on Elliott Bay will be in the Central Waterfront District, including Madison and Harrison Streets. Ferries from West Seattle, Alki Point, Harbor Island, the foot of Twenty-eighth Avenue Southwest, and the Magnolia Bluff District in the vicinity of Wolf Creek, and eventually from points across Puget Sound will be operated to and from these terminals.

In order to give the Harbor Island District a short connection with the wholesale and manufacturing district, a ferry should be operated across the East Waterway at Railroad Avenue as suggested under the caption "Harbor Island." If found desirable, similar service may be provided across the West Waterway at Railroad Avenue.

(2) The ferry service across Lake Washington will be of even greater importance than that on Elliott Bay on account of the great length of the lake (18 miles) and the large population that will ultimately inhabit the extensive area on the east side of the lake. Ferries from the vicinity of Bellevue, Yarrow, Kirkland, Juanita and points north will eventually operate through the canal into Lake Union, utilizing the proposed ferry terminal at the south end of the lake. The most important ferry terminal for the south half of Lake Washington will undoubtedly be at Day Street because a maximum grade of three per cent along the shortest route may be obtained from that point into the center of the city. Ferries from Bellevue, Mercer Island and other points on the east shore of Lake Washington will be operated to the Day Street terminal. Madison Street and Yesler Way will continue to be important ferry terminals.

A ferry will probably be required from the southerly portion of Mercer Island to some point in the vicinity of Seward Park. Ferry service will also be required from May Creek and other points on the southeast side of Lake Washington to Rainier Beach.

Eventually ferry routes will be established between points all around Lake Washington.

Closing Word

RECOGNITION of Seattle's needs has given rise to a new civic movement in the right direction. The propriety of such recognition has been made clear by precedent and this movement shows a readiness to take advantage of every suggestion and help in the upbuilding of a community having possibilities second to none.

These possibilities have been recapitulated in the foregoing pages, and plans for their crystalization into actualities have been detailed. Every statement, suggestion and general scheme or plan therein submitted, has been the outcome of a careful study of the situation.

Expenditures of large sums will be demanded as the years roll on, but a community which has already accomplished enough to excite world-wide admiration will find means to continue a good work with but one possible outcome; especially in view of the certainty that work performed haphazard and piecemeal, or which does not follow an approved general plan, will cost more, produce less and be less creditable.

FINALLY

The plan, with *the exception of the Civic Center, the street encircling the Civic Center, the extension of Dexter Avenue southward to the Civic Center, the extension of Ninth Avenue southward from Denny Way to Stewart Street, the position of Central Stations on the axis of Central Avenue, and the fixed policy of keeping all waterways which face upon Elliott Bay free from bridges,* need not be followed on precise lines in every instance, but the plan should be deviated from only when detail studies preparatory to construction show minor changes to be necessary, and any deviation should not be of such nature or extent as to jeopardize the value and harmony of the plan as a whole, or any part thereof.

The plan is set forth in words in this report, and illustrated, and explained in the appendices and by maps, sketches, designs and illustrations accompanying, which are made part hereof.

APPENDIX NO. I

Arterial Highways

CENTRAL AVENUE

Beginning at the south line of Sec. 25, T. 23 N., R. 5 E., about 1,200 feet east of the west line thereof, and extending thence north, parallel to the west line, to the north line of said section and produced north into Sec. 24, T. 23 N., R. 4 E., about 2,050 feet; thence northwesterly, crossing the west line of said Sec. 24 about 1,150 feet south of the northwest corner of said section; thence produced northwesterly, crossing the north line of Sec. 23, T. 23 N., R. 4 E., about 660 feet west of the northeast corner thereof; thence produced northwesterly about 470 feet and angling northwesterly, crossing the east and west center line of Sec. 14, T. 23 N., R. 4 E., about 180 feet west of the center of said section and extended northwesterly about 670 feet to an angle point; thence northwesterly crossing the north line of said Sec. 14 about 600 feet east of the northwest corner of said Sec. 14; thence extended northwesterly, crossing the west line of Sec. 11, T. 23 N., R. 4 E., about 890 feet north of the southwest corner of said section to a branch. The proposed width of the above portion of this highway is 180 feet.

Proposed width 120 feet. Extending from the last named point, northwesterly, crossing the north line of Sec. 10, T. 23 N., R. 4 E., about 2,200 feet east of the northwest corner of said section; thence extended northwesterly about 1,920 feet to an angle point; thence northwesterly crossing the west line of Sec. 3, T. 23 N., R. 4 E., about 450 feet south of the northwest corner of said section; thence continuing northwesterly about 1,520 feet to an angle point; thence northwesterly to an angle point on the north line of Sec. 23, T. 24 N., R. 4 E., about 1,860 feet west of the northeast corner of said section; thence northwesterly to the intersection of Fourth Avenue South and Colorado Avenue, all as shown on Maps Nos. 7 and 8 of the proposed improvement of Duwamish Waterway.

FOURTH AVENUE SOUTH: Proposed width, 120 feet. Existing width variable from Colorado Street to Seattle Boulevard. Existing width 100 feet from Seattle Boulevard to Seattle Boulevard at about Lane Street; existing width variable to Washington Street. See Map No. 19.

PREFONTAINE PLACE: Existing width from Washington Street to Yesler Way, 75 feet.

THIRD AVENUE: Existing width 84 feet from Yesler Way to Pike Street; existing width 90 feet from Pike Street to Stewart Street.

THIRD AVENUE PRODUCED: Proposed width 90 feet from Stewart Street to the marginal street of the proopsed Civic Center.

DEXTER AVENUE AND DEXTER AVENUE PRODUCED: Proposed width 350 feet from the marginal street of the proposed Civic Center to John Street; proposed width 150 feet from John Street to Mercer Street; existing width 66 feet. Existing width 80 feet, proposed width 120 feet from Mercer Street to the connection with the proposed Stone Way Bridge over Lake Union; proposed bridge 75 feet wide, all as shown on Map No. 12 of the proposed improvement of Lake Union.

STONE WAY: Existing width, variable; proposed width, 120 feet from Lake Union to North Forty-sixth Street.

STONE AVENUE: Existing width, 80 feet; proposed width, 120 feet from North Forty-sixth Street to North Fiftieth Street.

STONE AVENUE PRODUCED: Proposed width through Woodland Park, 120 feet from North Fiftieth Street to North Sixty-fifth Street and West Green Lake Boulevard.

AURORA AVENUE AND AURORA AVENUE PRODUCED: Existing width, 66 feet; proposed width, 120 feet from North Sixty-fifth Street to North Seventy-third Street.

NORTHEASTERLY DIAGONAL: Proposed width, 120 feet, connecting the intersection of North Seventy-third Street and Aurora Avenue with a point 33 feet south of the intersection of North Eighty-second Street and Ashworth Avenue.

ASHWORTH AVENUE: Existing width, 70 feet; proposed width, 120 feet, from North Eighty-second Street to North Eighty-fifth Street. Beginning at the intersection of North Eighty-fifth Street and Ashworth Avenue; thence north along Ashworth Avenue produced, about 3,200 feet to the point of a curve to the left, radius 2,865 feet, through 10° 15′; thence northwesterly along a tangent 1,175 feet to the point of a curve to the right, radius 2,865 feet through 46° 15′, crossing the north line of Sec. 31, T. 26 N., R. 4 E., about 1,650 feet west of the northeast corner thereof; thence northeasterly along a tangent 1,493 feet to the point of a curve to the left, radius 5,730 feet through 8° 47′, crossing the east line of Sec. 30, T. 26 N., R. 4 E., about 1,840 feet south of the northeast corner thereof; thence northeasterly along a tangent crossing the north line of Sec. 29, T. 26 N., R. 4 E., about 950 feet east of the northwest corner thereof, and continuing northeasterly 1,730 feet to the point of a curve to the left, radius 2,865 feet through 22° 51′; thence northeasterly along a tangent to said curve about 1,770 feet to the point of a curve to the right, radius 2,865 feet through 9° 45′; thence northeasterly 1,581 feet along a tangent to said curve, crossing the north line of Sec. 20, T. 26 N., R. 4 E., about 2,300 feet east of the northwest corner of said section; thence along a curve to the left, radius 1,146 feet through 66° 24′; thence along a tangent to said curve about 627 feet; thence along a curve to the right, radius 955 feet through 45° 28′; thence northwesterly along a tangent 1,778 feet; thence by a curve to the right, radius 955 feet through 31° 40′, crossing the north line of Sec. 17, T. 26 N., R. 4 E., about 1,150 feet east of the northwest corner thereof; thence northeasterly along a tangent to said curve, crossing the north line of Sec. 8, T. 26 N., R. 4 E., about 1,760 feet west of the northeast corner of said section; thence continuing northeasterly, crossing the east line of Sec. 5, T. 26 N., R. 4 E., about 1,430 feet south of the northeast corner thereof; thence continued northeasterly to the Snohomish County line, crossing the north line of Sec. 4, T. 26 N., R. 4 E., about 650 feet east of the northwest corner of said section. Practically all grades on this avenue can be had within 3%; a portion in Stone Way will require 3.5%. That portion of this highway between the junction of Highways Nos. 33 and 34 is to be a boulevard not less than 160 feet in width (see Boulevard). That part of the above location north of Eighty-fifth Street is shown on 400-foot scale, field contour maps. (Not printed.)

HIGHWAY NO. 1

SEVENTEENTH AVENUE WEST: Existing width, 120 feet, West Garfield Street to Lawton Way; existing width, 100 feet, Lawton Way to West Bertona Street, grade 3% or less, to West Wheeler Street; existing grade, 0.5% to West Ray Street; existing grade, 0.5% to West Armour Street; grade proposed, 2% to 8.4 feet fill at West Barrett Street; 3% to Grand Boulevard; existing 1.8% to West Bertona Street.

THORNDYKE AVENUE: Existing width, 100 feet, West Bertona Street Fifteenth Avenue West; existing grade 1.5%, West Bertona Street to Ruffner Street; existing grade 0.5% to Emerson Street and Fifteenth Avenue West.

GRAND BOULEVARD: Existing width, 100 feet, Seventeenth Avenue West to Twentieth Avenue West. Viaduct 0.0% crossing G. N., N. P. and O.-W. Ry. tracks.

TWENTIETH AVENUE WEST: Existing width, 100 feet, West Barrett Street to West Bertona Street; existing width, 80 feet, West Barrett Street to West Halladay Street.

LAWTON WAY: Existing width, 75 or 80 feet from Fifteenth Avenue West to Twentieth Avenue West.

GILMAN AVENUE: Existing width, 100 feet, West Bertona Street to West Thurman Street; existing grade 0.6%, West Bertona Street to Ruffner Street; existing grade 2% to Thurman Street.

GILMAN AVENUE: Proposed northwesterly extension 90 feet wide to South Shilshole Place; proposed grade, 2.8% Thurman Street to Jameson Street; proposed vertical curve to Harley Avenue; proposed grade, 3.5% to Thirty-fourth Avenue West; proposed grade, 3.5% to South Shilshole Place. Elevated (49) proposed. Bridge 56 feet wide, level, crossing Salmon Bay, north and south, center line about 335 feet west of the center line of Thirty-fourth Avenue Northwest. (Overhead crossing at existing Great Northern Railway and Market Street.)

THIRTY-SIXTH AVENUE NORTHWEST: Proposed grade, 1.2%, thence by curve to left and a tangent to West Fifty-sixth Street and Thirty-sixth Avenue Northwest. Proposed extension 66 feet to branch Roadway of Seaview Avenue; thence north parallel and about 90 feet west of Thirty-sixth Avenue Northwest, proposed 66 feet extension, and proposed grade 5% to West Fifty-ninth Street, crossing over both Great Northern and Oregon-Washington proposed lines.

WEST FIFTY-NINTH STREET: Existing width, 66 feet; proposed grade, 3% to Thirty-fourth Avenue Northwest.

DIAGONAL: Proposed width, 66 feet; proposed grade, 3.4% to grade at intersection of Thirty-second Avenue Northwest and West Sixtieth Street.

THIRTY-SECOND AVENUE NORTHWEST: Proposed width, 66 feet; existing width, 66 feet from West Sixtieth Street to West Sixty-fifth Street; variable West Sixty-fifth Street to West Seventy-fifth Street; 30 feet West Seventy-fifth Street to West Eightieth Street; 66 feet West Eightieth Street to West Eighty-fifth Street. Existing maximum grade, 4.8%.

LAWTON WAY: Proposed. Elevated roadway from Fifteenth Avenue West to West Halladay Street.

WEST HALLADAY STREET: Proposed width, 66 feet, Twentieth Avenue West to Twenty-first Avenue West.

JOLIET AVENUE: Existing width, 100 feet, West Halladay Street to West Howe Street.

TWENTY-THIRD AVENUE WEST: Proposed width, 90 feet, West Howe Street to West Garfield Street.

TWENTY-FIRST AVENUE WEST: Existing width, 66 feet, West Halladay Street Thorndyke Avenue.

TWENTIETH AVENUE WEST: Existing width, 80 feet, West Halladay Street to Thorndyke Avenue.

WEST WHEELER STREET: Proposed elevated roadway, Fifteenth Avenue West to Thorndyke Avenue.

GRADES

LAWTON WAY: Elevated. Proposed 2% Fifteenth Avenue West to West Wheeler Street; proposed 0.4% to West Halladay Street.

WEST HALLADAY STREET: Elevated at Twentieth Avenue West; proposed 3.9% to Twenty-first Avenue West.

JOLIET AVENUE: Proposed 3.1% West Halladay Street to West Wheeler Street (passing under West Wheeler Street Elevated); proposed 2.6% grade to West Boston Street; proposed 1.5% to West Howe Street.

TWENTY-THIRD AVENUE WEST: Proposed 0.9%, West Howe Street to West Garfield Street.

TWENTY-FIRST AVENUE WEST: Proposed 3%, West Halladay Street to Thorndyke Avenue.

TWENTIETH AVENUE WEST: Proposed 0.4%, West Halladay Street to Thorndyke Avenue.

WEST WHEELER STREET: (Elevated.) Proposed 0.7% from grade at Fifteenth Avenue West to the west line of Smith's Cove Waterway; proposed 5% to grade at Thorndyke Avenue.

HIGHWAY NO. 2

WIDTH

SEVENTEENTH AVENUE NORTHWEST: Existing, 66 feet; proposed, 80 feet, from Market Street to West Sixty-second Street.

DIAGONAL: Proposed, 100 feet, connecting intersections of Seventeenth Avenue Northwest and West Sixty-second Street with West Seventieth Street and Eli Avenue Northwest, crossing West Sixty-seventh Street about 140 feet west of Fourteenth Avenue Northwest.

COMPOUND CURVES: Proposed, 100 feet; thence by a curve to right, radius 560 feet through 43°; thence by a curve to left, radius 1,320 feet through 38° 30′ tangent to diagonal below at the intersection of Ninth Avenue Northwest and West Seventy-third Street.

DIAGONAL: Proposed 100 feet, connecting intersections of Ninth Avenue Northwest and West Seventy-third Street with Eighth Avenue Northwest and West Seventy-fifth Street.

GRADES

SEVENTEENTH AVENUE NORTHWEST: Existing 3%, Market Street to West Sixty-second Street.

DIAGONAL: At West Sixty-second Street, proposed 1.1% to 14 foot cut at West Sixty-third Street; proposed 1.1% to 4.0 foot cut at West Sixty-fourth Street; proposed 1.1% to grade at West Sixty-fifth Street; proposed 3% to 2.0 foot cut at West Sixty-seventh Street.

CURVES: Proposed 3% to 1.0 foot cut at Eli Avenue Northwest on south; proposed 3% to grade at Eli Avenue Northwest on north; proposed 3% to 2.0 foot fill at Twelfth Avenue Northwest; proposed 3% to 2.0 foot cut at Eleventh Avenue Northwest; to 8.0 foot cut at Tenth Avenue Northwest; to 11.0 foot cut at Ninth Avenue Northwest and West Seventy-third Street.

DIAGONAL: Proposed 0.5% to 7.5 foot cut at Dibble Avenue; proposed 0.5% to grade at Eighth Avenue Northwest and West Seventy-fifth Street.

HIGHWAY NO. 3

THIRD AVENUE: Existing width, 90 feet, from the marginal way around the proposed Civic Center to Denny Way.

DENNY WAY: Existing width, 66 feet; proposed width, 90 feet from Third Avenue to Second Avenue.

MAGNOLIA WAY: Proposed, width 120 feet, from Second Avenue and Denny Way to Elliott Avenue; existing width, 100 feet, West Mercer Street to West Galer Street.

FIFTEENTH AVENUE WEST: Proposed width, 80 feet, West Galer Street to Emerson Street, and 75 feet, Fifteenth Avenue West produced, from Emerson Street to Harbor Line in Salmon Bay. Bridge proposed 75 feet wide.

FIFTEENTH AVENUE NORTHWEST: Existing width, 94 feet; proposed width, 100 feet from the Harbor Line to West Sixty-fifth Street, that portion between West Forty-eighth Street and West Fiftieth Street to be 135 feet wide to provide roadways along the sides of approach to bridge.

GRADES: Third Avenue, Denny Way and Magnolia Way, proposed grade not to exceed 3%. Elliott Avenue, Fifteenth Avenue West produced, Fifteenth Avenue Northwest, Leary Avenue and West Fiftieth Street, all grades 3% or less. Maximum existing grades 5% between West Fifty-first and West Sixty-fifth Streets.

HIGHWAY NO. 4

Proposed width, 90 feet. This avenue is a production of the present Leary Avenue, from West Forty-eighth Street to a point about 355 feet southeasterly of West Seventy-seventh Street.

NORTHWESTERLY DIAGONAL: Proposed width, 90 feet. Beginning at the end of Leary Avenue produced, with a curve to the left, radius 2,560 feet through 19° 30′; thence northwesterly to the intersection of Twenty-eighth Avenue Northwest and West Eightieth Street; thence along the right of way to the Loyal Heights Railway Co., widening same to 90 feet, all off the southerly side, between Twenty-eighth and Thirty-second Avenues Northwest.

GRADES: 3% maximum between West Forty-eighth and Market Streets; 5% maximum, Market Street to Thirty-second Avenue Northwest.

HIGHWAY NO. 5

SIXTH AVENUE NORTHWEST: Existing width, 60 feet; proposed width, 84 feet, all off east side between Leary Avenue and West Forty-eighth Street; proposed, 84 feet by reverse curve, radius 1,885 feet between West Forty-eighth and West Fifty-second Streets; existing width, 60 feet; proposed width, 84 feet, 12 feet off each side between West Fifty-second and West Fifty-fourth Streets; proposed, 84 feet, by reverse curve, radius 1,220 feet between West Fifty-fourth and West Fifty-sixth Streets; existing width, 66 feet; proposed, 84 feet, all off west side between West Fifty-sixth and West Sixty-fifth Streets.

CURVE: Proposed width, 84 feet; curve to left, radius 1,040 feet.

DIAGONAL: Proposed width, 84 feet extended northwesterly to Eighth Avenue Northwest and West Seventieth Street.

CURVE: Proposed width, 84 feet; curve to right, radius 1,020 feet to tangent with Eighth Avenue Northwest.

EIGHTH AVENUE NORTHWEST: Existing width, 74 feet; proposed, 84 feet, all off east side from point of tangent, south of West Seventy-third Street, to point of curve 60 feet south of West Seventy-fourth Street. Curve to right, radius 1,015 feet to West Seventy-sixth Street.

DIAGONAL: Proposed, 100 feet wide; extension connecting intersection of West Seventy-fifth Street and Eighth Avenue Northwest with West Seventy-eighth Street and Sixth Avenue Northwest; proposed 100 feet width by curve to the left, radius 480 feet tangent to diagonal and to Sixth Avenue Northwest.

SIXTH AVENUE NORTHWEST: Existing width, 60 feet; proposed width, 100 feet from West Seventy-eighth Street to West Eighty-fifth Street.

GRADES

SIXTH AVENUE NORTHWEST: Proposed 0.85%, Leary Avenue to grade at West Forty-third Street; proposed, 0.85% to 4.0 foot cut at Bright Street to 3.5 foot cut at West Forty-fourth Street; proposed, 0.85% to 2.2 foot cut at West Forty-fifth Street, to grade at West Forty-sixth Street; proposed 0.85% to 3.0 foot fill at West Forty-seventh Street, to 6.5 foot fill at West Forty-eighth Street; proposed 1.9% to 7.0 foot fill at West Forty-ninth Street, to 3.0 foot fill at West Fiftieth Street; proposed 2.3% to 3.0 foot cut at West Fifty-first Street to 0.6 foot cut at West Fifty-second Street; proposed 2.3% to 2.0 foot fill at West Fifty-third Street, to 1.0 foot fill at West Fifty-fourth; proposed 2.3% to 4.5 foot cut at West Fifty-fifth Street, to 8.0 foot cut at West Fifty-sixth Street (West Woodland school between West Fifty-sixth and West Fifty-eighth Streets); proposed 2.3% to 3.2 foot cut at West Fifty-eighth Street, to 0.5 foot fill at West Sixtieth Street; proposed 2.3% to 3.6 foot fill at West Sixty-second Street; proposed 3% to grade at West Sixty-sixth Street.

NORTHWESTERLY DIAGONAL: Grade at Sixth Avenue Northwest and West Sixty-fifth Street; proposed 3% to 1.0 foot fill at Sixth Avenue Northwest; proposed 3% to grade at West Sixty-seventh Street; proposed grade 3.5% to 1.5 foot fill at Seventh Avenue Northwest; proposed grade 3.5% to 2.5 foot fill at West Seventieth Street.

EIGHTH AVENUE NORTHWEST: Proposed 3½% to grade at West Seventy-third Street on west; existing 3.4% to grade at West Seventy-third Street on east; 2.5% to grade at West Seventy-fourth Street; existing 2.5% to grade at Seventy-fifth Street.

DIAGONAL: Existing grades at West Seventy-fifth Street to West Eighty-fifth Street, all less than 3%.

HIGHWAY NO. 6

Proposed width, 100 feet, beginning at the intersection of the north and south center line of the SE¼ of Sec. 20, T. 23 N., R. 4 E., with the south line thereof, and extending, thence north along said center line 3,585 feet to the point of a curve to the right, radius 2,865 feet through 23°; thence northeasterly along a tangent to said curve 1,840 feet (crossing the north line of said Sec. 20, 835 feet west of the northeast corner thereof); thence along a curve to the left, radius 2,865 feet through 29°; thence northwesterly along a tangent to said curve 2,910 feet, crossing the south line of Sec. 8, T. 23 N., R. 4 E., about 425 feet west of the southeast corner thereof; thence along a curve to the left, radius 1,146 feet through 40°; thence along a tangent to said curve 2,180 feet to the point of a curve to the right, radius 1,146 feet through 45° 20′, tangent to the north and south center line of Sec. 23 N., R. 4 E., about 610 feet north of the center thereof; thence north along the north and south center line of said section to the north line thereof; thence north along the north and south center line of Sec. 5, T. 23 N., R. 4 E., 1,230 feet to the point of a curve to the left, radius 3,274 feet through 37° 30′ to a point of reverse curve; thence along a curve to the right, radius 3,620 feet through 25°; thence northwesterly along a tangent to said curve 2,485 feet (crossing the south line of Sec. 32, T. 24 N., R. 4 E., about 1,130 feet east of the southwest corner thereof); thence along a curve to the left, radius 4,584 feet through 21° to a point of reverse curve; thence along a curve to the right, radius 2,165 feet; thence northwesterly following the topography to obtain a maximum 3% grade to the southwesterly extension of Front Street; thence along Front Street and Front Street produced to Central Avenue, as shown on Map 7, of proposed improvement of Duwamish Waterway.

GRADES: The proposed grades along the courses of this highway are all 3% or less.

FIRST AVENUE SOUTH: Existing width, 100 feet, Highway No. 49 to Seattle Boulevard; existing width, 100 feet Seattle Boulevard to King Street.

DEXTER AVENUE: Existing width, 90 feet from Halladay Street to Fulton Street.

FOURTH AVENUE NORTH AND FREMONT AVENUE: Existing width, 80 feet from Fulton Street to Blewett Street.

LEARY AVENUE: Existing width, 90 feet from Blewett Street to Market Street.

DEXTER AVENUE: All rates proposed will be under 3% from Halladay Street to Fourth Avenue North and Fulton Street.

FOURTH AVENUE NORTH AND FREMONT AVENUE: Existing at Fulton Street; existing under 3% to Nickerson Street; crossing over Northern Pacific Railway Belt Line; existing under 3% approach to proposed lift bridge over Lake Washington Canal; maximum existing 3.0% to Blewett Street.

LEARY AVENUE: Existing 0.5% to Evanston Avenue.

GRADES: From Evanston Avenue to Market Street the proposed grades are established by ordinance and are all under 3%.

HIGHWAY NO. 7

PHINNEY AVENUE: Existing width, 55 feet; proposed width, 80 feet, North Forty-sixth to North Forty-ninth Streets; reverse curve, 480 feet radius, between North Forty-ninth and North Forty-first Streets; minimum width, 80 feet; existing width, 80 feet from North Fifty-first to North Sixty-seventh Streets; existing reverse curve on North Sixty-seventh Street between Phinney and Greenwood Avenues.

GREENWOOD AVENUE: Existing width, 80 feet from North Sixty-seventh to North Eighty-fifth Streets.

GRADES

PHINNEY AVENUE: Maximum existing 3.4%, North Forty-sixth to North Sixty-seventh Streets.

NORTH SIXTY-SEVENTH STREET: Existing grade, 1.9% between Phinney and Greenwood Avenues.

GREENWOOD AVENUE: Maximum existing grade, 4.5%, North Sixty-seventh Street to North Eighty-fifth Street.

HIGHWAY NO. 8

FOURTH AVENUE: Existing width, 84 feet from Madison Street to Pike Street.

WESTLAKE AVENUE AND WESTLAKE AVENUE NORTH: Existing width, 90 feet from Pike Street to Valley Street. For details of the proposed location and widths between Valley Street and Fremont Avenue, see Map No. 8, proposed improvements of Lake Union.

GRADES

FOURTH AVENUE: Maximum existing 3.7%, Madison Street to Pike Street.

WESTLAKE AVENUE AND WESTLAKE AVENUE NORTH: Maximum existing 2.2%, Pike Street to Valley Street. Proposed rate less than 3% to Fremont Avenue.

HIGHWAY NO. 9

DIAGONAL: Northwesterly proposed, 84 feet wide, connecting intersections of Aurora Avenue and North Seventy-first Street with Dayton Avenue and North Eighty-third Street. Connection at Aurora Avenue with curve to left radius 1,670 feet.

DIAGONAL: Northwesterly proposed, 84 feet, connecting intersections of North Eighty-third Street and Dayton Avenue with North Eighty-fifth Street and Greenwood Avenue. Connection between diagonals effected with curve to left, radius 1,160 feet.

GRADES: Grade at North Seventy-first Street and Aurora Avenue, maximum proposed 2.9% to grade at North Seventy-fifth Street; proposed 1.8% to 3.0 foot fill at North Seventy-sixth Street; proposed 1.8% to 1.0 foot fill at North Seventy-seventh Street and Fremont Avenue; proposed 1.8% to grade at North Seventy-eighth Street; maximum proposed 1.6% to grade to North Eighty-third Street; proposed vertical curve to 5.0 foot cut at North Eighty-fourth Street; proposed 3% to grade at North Eighty-fifth Street and Greenwood Avenue.

HIGHWAY NO. 10

STONE WAY: Existing width, 90 feet, North Forty-sixth to North Fiftieth Streets (North Forty-eighth Street crosses overhead).

INTERLAKE AVENUE: Existing width, 84 feet, North Fiftieth to North Fifty-third Streets.

DIAGONAL: Northeasterly proposed width, 84 feet, connecting intersections of North Fifty-third Street and Interlake Avenue with Woodlawn Avenue at angle point north of North Fifty-seventh Street; connection at angle point effected by curve to right, radius 1,795 feet.

WOODLAWN AVENUE: Existing width, 60 feet; proposed width, 84 feet, Wallingford Avenue to Meridian Avenue with reverse curve of radius 970 feet at Meridian Avenue; thence along Woodlawn Avenue, existing 60 feet, proposed width 84 feet to North Sixty-fourth Street; thence curve to the left, radius 970 feet to connection with Woodlawn Avenue, north of North Sixty-fifth Street, existing width 60 feet; proposed width 84 feet all off west side to North Sixty-seventh; thence produced northeasterly; proposed width 84 feet and connected with a reverse curve, radius 970 feet to Corliss Avenue produced.

CORLISS AVENUE PRODUCED AND VIADUCT OVER THE EAST ARM OF GREEN LAKE: Existing width, 60 feet; proposed width, 84 feet, produced south across Green Lake; thence north along Corliss Avenue to about 190 feet north of East Green Lake Boulevard; thence by a curve to left, radius 640 feet to tangent with northeasterly proposed 84 feet diagonal.

DIAGONAL: Proposed width, 84 feet. Diagonal connecting the intersections of First Avenue Northeast and East Seventy-fifth Street with a point on the center line of Ashworth Avenue 120 feet south of intersection of North Eighty-second Street.

WOODLAWN AVENUE: Existing width, 60 feet; proposed width, 84 feet, all off west side, between North Seventy-fifth and North Sixty-seventh Streets.

GRADES

STONE WAY: Cut 6 feet at North Forty-sixth Street to grade at North Forty-seventh Street; proposed 0.8% to cut 1.0 foot at North Forty-eighth Street; proposed 1.08% to grade at North Forty-ninth Street; Interlake Avenue existing 2.0% to North Fifty-third Street.

DIAGONAL: Proposed 0.8% to grade at North Fifty-fifth Street and North Terrace Street; proposed 3.0% to cut of 6.5 feet at North Fifty-seventh Street; proposed 0.5% to cut of 3.5 feet at angle point in Woodlawn Avenue north of North Fifty-seventh Street.

WOODLAWN AVENUE: Proposed 3.0% to grade at Kenwood Place; proposed 0.75% to cut 9.1 feet, 350 feet north of Kenwood Place. Proposed 0.75% to grade at Kirkwood Place; existing 0.5% to Meridian Avenue; proposed 3% to 2.2 foot cut at North Sixty-fourth Street; proposed 3.0% to 4 foot cut at North Sixty-fifth Street; proposed 1.3% to 1 foot cut at North Sixty-seventh Street; proposed 1.35% to grade at Chapin Place; proposed 3.0% to 2.5 foot cut at Sunnyside Avenue; proposed 3.0% to 1.8 foot cut at First Avenue Northeast; proposed 3.0% to grade at Second Avenue Northeast; existing 1% to Fourth Avenue Northeast; existing 0.6% to Fifth Avenue Northeast; existing 1.6% to Meadow Place; existing 2% to East Seventy-second Street; existing 2.4% to East Seventy-third Street; existing 1.5% to Fourth Avenue Northeast; existing 1.0% to Latona Avenue; existing 1.0% to Second Avenue Northeast; existing 1.2% to East Seventy-fifth Street.

GRADE

DIAGONAL, WOODLAWN PRODUCED NORTHWESTERLY: Grade at Woodlawn Avenue and East Seventy-fifth Street, 0.8% to 9 foot fill at Sunnyside Avenue; proposed grade 0.8% to 15 foot fill at Corliss Avenue; proposed 0.5% to 2.0 foot cut at Bagley Avenue; proposed 0.5% to 8.0 foot cut at North Seventy-seventh Street; proposed 0.5% to 24 foot cut at Meridian Avenue; proposed 0.5% to grade at North Seventy-eighth Street; proposed 0.4% to grade at Stroud Avenue.

GRADE: Proposed 0.4% to 12 foot fill at North Eightieth Street; proposed 0.8% to 13 foot fill at Ashworth Avenue.

VIADUCT: Beginning with proposed 1 foot cut at North Sixty-seventh Street and Woodlawn Avenue; thence proposed 1.6% to 21.0 foot overhead crossing and East Green Lake Boulevard on south; thence 0.0% to 20 foot overhead crossing at East Green Lake Boulevard on north; thence 3% to 15.0 foot fill at intersection with diagonal.

HIGHWAY NO. 11

RAVENNA BOULEVARD: Existing width, 150 feet from Eleventh Avenue Northeast to Woodlawn Avenue.

GRADE

RAVENNA BOULEVARD: Maximum existing 1.0% from Eleventh Avenue Northeast to Woodlawn Avenue.

HIGHWAY NO. 12

MERCER STREET: Existing width, variable; proposed width, 80 feet from Dexter Avenue to Fairview Avenue for a viaduct passing over the proposed railroad tracks.

EASTLAKE AVENUE AND EASTLAKE AVENUE PRODUCED: Proposed width, 120 feet from the intersection of Mercer Street and Fairview Avenue to Nelson Place; thence along a curve to the left, connecting with a street which is—

HOWARD AVENUE NORTH AND HOWARD AVENUE NORTH PRODUCED: Widening the present 60 foot street between East Newton and East Lynn Streets to 100 feet, all off the west side, and producing thence north and south to about E. Galer and Roanoke Streets respectively; thence a curved street connects with—

EASTLAKE AVENUE AND EASTLAKE AVENUE PRODUCED: Existing width, 75 feet; proposed width, 120 feet from Twelfth Avenue North to Hamlin Street and produced southwesterly to Edgar Street.

BRIDGE: Connecting intersections of Eastlake Avenue and Harvard Avenue North with Sixth Avenue Northeast and East Fortieth Street. Proposed width, 75 feet.

DIAGONAL NORTHEASTERLY: Proposed 90 foot street connecting a point on Sixth Avenue Northeast, 180 feet south of East Forty-second Street, with the intersection of East Forty-seventh Street and Eleventh Avenue Northeast.

ELEVENTH AVENUE NORTHEAST: Existing width, 60 feet; proposed width, 90 feet from East Forty-seventh Street to University Boulevard.

CURVES: Proposed width, 90 feet, beginning at the point of curve about 60 feet south of the south line of University Boulevard and extending thence along a curve to the right, radius 700 feet tangent to East Sixty-second Street at Brooklyn Avenue; thence along East Sixty-second Street to a point of curve 400 feet east of the intersection of Brooklyn Avenue; thence along a curve to the right, radius, 1,200 feet, through 21° to a point of compound curve; thence along a curve to the right, radius 574 feet, through 39° 17′; thence along a tangent to said curve about 205 feet to the point of a curve to the left, radius 574 feet, through 95° 03′; thence along a tangent to said curve connecting with Highway No. 33 at the intersection of Twenty-fifth Avenue Northeast and East Seventieth Street.

BRANCH

DIAGONAL NORTHWEST BRANCH: Proposed 84 foot extension connecting a point on the center line of Sixth Avenue Northeast, 300 feet south of North Forty-second Street, with the intersection of Thackeray Place and East Forty-third Street.

EAST FORTY-THIRD STREET: Existing width, 60 feet; proposed width, 84 feet between Thackeray Place and First Avenue Northeast.

DIAGONAL NORTHWEST: Proposed 84 foot extension connecting intersection of North Forty-third Street and First Avenue Northeast with North Forty-fifth Street and Sunnyside Avenue.

GRADES

Bridge crossing Lake Union (double deck).

Grade at intersection of Harvard Avenue North and Eastlake Avenue; thence 3% grade ascending to 150 foot lift bridge; elevation 73 feet; thence 3% grade ascending to the intersection of the Northeast Proposed Diagonal to 8.0 foot fill.

INCLINE: 3% grade descending connects upper bridge with existing upper roadway on East Fortieth Street.

BRIDGE (Lower Deck): Beginning at the circular street (connecting Harvard Avenue North and Twelfth Avenue North), under the upper bridge; thence descending 0.5% grade to a 150 foot lift bridge, elevation 48; thence 1.8% grade descending to overhead crossing at Northlake Avenue and to grade at Pacific Place.

NORTHEAST DIAGONAL: Proposed fill 9 feet at Sixth Avenue Northeast;

Proposed 3.0% grade to 7.5 foot fill at East Forty-second Street;

Proposed 3.0% grade to 13.0 foot fill at Seventh Avenue Northeast;

Proposed 3.0% grade to grade at East Forty-third Street and Eighth Avenue Northeast;

Proposed 3.0% grade to 12 foot cut at Ninth Avenue Northeast;

Proposed 3.0% grade to 7.5 foot cut at crossing under East Forty-fifth Street;

Proposed 3.0% grade to grade at Tenth Avenue Northeast;

Proposed 3.0% grade to grade at intersection of East Forty-seventh Street and Eleventh Avenue Northeast.

ELEVENTH AVENUE NORTHEAST: Maximum existing 3% grade to University Boulevard.

CURVES: Grade at University Boulevard, proposed 1% grade to grade at Sylvester Place;

Proposed 1.2% grade to cut 1.0 foot at Twelfth Avenue Northeast;

Proposed 1.2% grade to grade at Brooklyn Avenue and East Sixty-second Street.

EAST SIXTY-SECOND STREET: Existing 3% grade to Fifteenth Avenue Northeast; the proposed grades along the extension of this highway do not exceed 3%.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Map No. 12, are to be of the widths there shown.

HIGHWAY NO. 13

TWENTY-THIRD AVENUE SOUTH AND TWENTY-THIRD AVENUE SOUTH PRODUCED: Existing width, 66 feet; proposed width, 84 feet from Rainier Avenue to Norman Street.

DIAGONAL: Proposed width, 84 feet, connecting the intersections of Twenty-third Avenue South and Norman Street with Twenty-sixth Avenue South and Dearborn Street, connection effected with curve to right and left, each radius 480 feet.

TWENTY-SIXTH AVENUE SOUTH: Existing width, 60 feet; proposed width, 84 feet from Dearborn Street to 110 feet north of Jackson Street, reverse curve, 480 feet radius to tangency with Twenty-seventh Avenue South.

TWENTY-SEVENTH AVENUE: Existing width, 60 feet; proposed width, 84 feet from 120 feet south of Yesler Way to East Cherry Street, reverse curve at East Cherry Street right and left radii, 525 feet. Existing width, 66 feet; proposed width, 84 feet, East Cherry Street to East Howell Street, reverse curve, right and left radii 480 feet at East Howell Street.

TWENTY-SEVENTH AVENUE AND TWENTY-SEVENTH AVENUE NORTH: Existing width, 66 feet; proposed width, 84 feet, East Howell Street to East Thomas Street, reverse curve to right, radius 620 feet and to left 580 feet, tangent at Twenty-eighth Avenue North, produced south at East Madison Street.

TWENTY-EIGHTH AVENUE NORTH: Existing width, 66 feet; proposed width, 84 feet, all off east side between East Madison Street and East Roy Street. Existing width, 66 feet; proposed width, 84 feet, all off west side between East Roy Street and East Ward Street, curve to left, radius 405 feet.

UNION BOULEVARD: Existing width, 66 feet; proposed width, 84 feet, all off east side, reverse curve to left, radius 480 feet to right, radius 305 feet, tangent to an 84 foot street whose center line is parallel to, and 45 feet west of the west line of Twenty-seventh Avenue North.

TWENTY-SEVENTH AVENUE NORTH: Proposed 84 foot street to Interlaken Parkway; thence 84 foot street by a reverse curve to left, radius 550 feet, and right, radius 565 feet.

TWENTY-SIXTH AVENUE NORTH (Produced South): Proposed 84 foot street lying east of and along the west margin of Washington Park, from point of tangent of reverse curve above, to East Lynn Street; thence to left, radius 560 feet to tangency with a diagonal street proposed 84 feet wide, which is East Montlake Place widened to 90 feet, all off northerly side, and produced southeasterly to East McGraw Street.

MONTLAKE BOULEVARD: Existing 150 feet wide from original canal location to present location.

Montlake Boulevard extending north, branching east and west paralleling and adjoining the right-of-way of the Northern Pacific Railway to East Forty-seventh Street; thence along a compound curve, practically paralleling the Northern Pacific right-of-way, and connecting with Twenty-fifth Avenue Northeast by a curve of radius 500 feet following the course of the street deeded by the State Legislature, through the grounds of the University of Washington.

TWENTY-THIRD AVENUE SOUTH: Grade at Rainier Avenue:
Proposed 4.8% grade to 4.3 foot fill at Plum Street;
Proposed 4.8% grade to 11.8 foot fill at Holgate Street;
Proposed 4.8% grade to 18.9 foot fill at Grand Street;
Proposed 4.8% grade to grade at Atlantic Street;
Existing 4.0% grade to Day Street, existing 4.6% grade to Judkins Street;
Existing 4.8% grade to Norman Street.

DIAGONAL

Proposed 5% grade to 10 foot cut at Twenty-fourth Avenue South;
Proposed 5% grade to grade at Charles Street;
Proposed 0.3% grade to grade at Dearborn Street;

TWENTY-SIXTH AVENUE SOUTH: Existing maximum 4% grade to Jackson Street.

REVERSE CURVE: Proposed 3.1% grade to 4.0 foot fill at Main Street; proposed 3.1% grade to 1.9 foot fill at Washington Street; proposed 3.1% grade to grade at Yesler Way.

TWENTY-SEVENTH AVENUE: Maximum existing 2% grade to East Cherry Street; proposed 5.0% grade to 2.0 foot fill at East Columbia Street; proposed 1.8% grade to grade at East Marion Street; maximum existing 3.9% grade to East Olive Street; proposed 4.3% grade to 20.3 foot overhead crossing at East Howell Street; proposed 4.3% grade to 15.3 foot overhead crossing at East Denny Way.

TWENTY-SEVENTH AVENUE NORTH: Proposed 4.3% grade to grade at East John Street; existing 1.0% grade to East Thomas Street.

REVERSE CURVE: Proposed 1.4% to 2.0 foot fill at Arthur Place; proposed 0.8% grade to grade at East Madison Street.

TWENTY-EIGHTH AVENUE NORTH: Existing East Madison Street, proposed 0.8% grade to East Mercer Street; existing maximum 3.0% grade to East Ward Street.

UNION BOULEVARD: Existing 0.6% grade to East Helen Street; thence 1,675 feet of proposed 3.3% (descending); thence 400 feet of proposed 0.25% (descending) crossing under Twenty-seventh Avenue North. Interlaken Parkway, clearance 20 feet.

TWENTY-SIXTH AVENUE NORTH: Thence descending 675 feet, proposed 1.13% grade; thence descending 1,500 feet, proposed 0.3% to cut 1.0 foot at East Lynn Street.

EAST MONTLAKE PLACE: Thence proposed 0.3% grade to grade at Calhoun Street; proposed 0.3% grade to 0.5 foot cut at Twenty-fifth Avenue North; proposed 0.3% grade to grade at Miller Street; maximum proposed 0.3% grade to grade at Roanoke Street.

MONTLAKE BOULEVARD: Maximum existing 1.3% grade to south margin of canal, right of way, crossing canal by bridges, paralleling the grade of the Northern Pacific Railway line, crossing underneath tracks, near west and north lines of University of Washington campus, all 3% or less.

BOYER AVENUE BRANCH

COMMERCIAL HIGHWAY OVER INTERLAKEN PARKWAY: Proposed 40 foot roadway, lying parallel to and west of the proposed highway on Twenty-seventh Avenue North, beginning at East Lee Street; thence north 460 feet to the point of curve of a curve to the left of radius 170 feet describing an arc of 90°; thence west along and north of the south line of Interlaken Parkway, 270 feet to the point of a curve to the right, of

radius 100 feet describing an arc of 58°; thence northwesterly along the westerly line of Parkway 190 feet to the point of a curve to the right, of radius 280 feet describing an arc of 32°; thence north along a tangent 120 feet to the point of a curve to the left, of radius 320 feet through an angle of 55° to Twenty-fourth Avenue North, tangent to southerly line of Boyer Avenue produced.

BOYER AVENUE: Existing width, 75 feet from Twenty-fourth Avenue North to Roanoke Street.

TWELFTH AVENUE NORTH: Existing width, 75 feet from Roanoke Street to Eastlake Avenue.

GRADES

Commercial Highway over Interlaken Parkway, beginning at the proposed highway on Twenty-seventh Avenue North and extending thence by a 4% grade on the upper roadway to the point of the first curve to the left, and continuing around the curve on a 4% grade. (Elevation in center of curve about one (1) foot higher than Park Boulevard), crossing over Twenty-sixth Avenue North to the point of the third curve; thence by a 3.7% grade to a grade crossing at the Park Boulevard; thence by a 2.6% grade to the existing grade of the intersection of Twenty-fourth Avenue North and Boyer Avenue.

BOYER AVENUE: Grade at Twenty-fourth Avenue North maximum existing 3.3% grade to Roanoke Street.

TWELFTH AVENUE NORTH: Maximum existing grade 3%, Roanoke Street to Eastlake Avenue.

HIGHWAY NO. 14

EAST SEVENTY-SECOND STREET: Existing width, 60 feet; proposed width, 84 feet, Woodlawn Avenue to Fifth Avenue Northeast; thence by a curve to the right, radius 620 feet through 38°; thence along a tangent to said curve 335 feet to the point of a curve to the left, radius 650 feet through 78°; thence northeasterly along a tangent to said curve, crossing the east line of Sec. 5, T. 25 N., R. 4. E., about 950 feet north of the east quarter corner of said section; thence continuing to an angle at the intersection of East Eightieth Street and Sixteenth Avenue Northeast; thence northeasterly to the intersection of Twentieth Avenue Northeast and East Eighty-fifth Street and extended about 640 feet to the point of a curve to the left, radius 500 feet through 47° 15′; thence northwesterly about 1,140 to a connection with the main highway.

GRADES

NORTH FORTY-FIFTH STREET: Existing width, 70 feet or over; proposed maximum, 84 feet between Sunnyside Avenue and Densmore Avenue.

The proposed grades along the courses described for this Highway are all 5% or less.

HIGHWAY NO. 15

EAST FORTY-SEVENTH STREET: Existing width, 60 feet; proposed width, 84 feet, Eleventh Avenue Northeast to Second Avenue Northeast.

DIAGONAL: Proposed 84 foot southwesterly extension connecting intersections of East Forty-seventh Street and Second Avenue Northeast with North Forty-fifth Street and Sunnyside Avenue.

DIAGONAL: Northwesterly proposed width, 84 feet, connecting intersection of North Forty-fifth Street and Densmore Avenue with North Forty-seventh Street and Woodlawn Avenue; thence, proposed width, 60 feet for viaduct connecting intersection of North Forty-seventh Street and Woodlawn Avenue with North Forty-ninth Street and Stone Avenue.

NORTH FORTY-NINTH STREET: Viaduct between Stone Avenue and Midvale Avenue proposed 30 feet widening, all off north side, between Stone Avenue and Midvale Avenue,

for grade roadway alongside viaduct. Existing width, 60 feet; proposed width, 84 feet from Midvale Avenue to Woodland Park Avenue.

DIAGONAL: Proposed width, 84 feet; southwesterly extension connecting North Forty-eighth Street and Whitman Avenue with North Forty-sixth Street and Aurora Avenue, and North Forty-ninth Street and Woodland Park Avenue with North Forty-eighth Street and Whitman Avenue.

NORTH FORTY-SIXTH STREET: Existing width, 80 feet; proposed width, 84 feet between Aurora and Greenwood Avenues.

DIAGONAL: Proposed 84 foot street by a curve to right, radius 696 feet (crossing intersection of Palatine Avenue and North Forty-sixth Street), through 46° 30′; thence by 590 feet of tangent; proposed 84 foot extension, crossing intersections of North Forty-seventh Street and First Avenue Northwest; thence by curve to right, through 27° 30′, radius 940 feet to intersection of West Fiftieth Street and Maple Grove Place; thence by tangent to intersection of West Fifty-second Street and Third Avenue Northwest; thence by northwesterly diagonal, connecting intersection of West Fifty-second Street (on the south) and Third Avenue Northwest to West Fifty-fifth Street and Sixth Avenue Northwest. Tangent connected by a reverse curve, radius 115 feet.

WEST FIFTY-FIFTH STREET AND MARKET STREET: Existing width, variable, about 85 feet between Sixth Avenue Northwest and Eighth Avenue Northwest. Existing width, variable, about 85 feet between Eighth Avenue Northwest and Ninth Avenue Northwest.

MARKET STREET: Existing width, 100 feet between Ninth Avenue Northwest and Thirty-second Avenue Northwest; existing width, 80 feet, Thirty-second Avenue Northwest and Seaview Avenue.

SEAVIEW AVENUE: Proposed double roadway between Market and West Sixtieth Streets, crossing overhead Great Northern right-of-way, and thence proposed 100 feet between West Sixtieth and West Eighty-fifth Streets.

GRADES

EAST FORTY-SEVENTH STREET: Grade at Eleventh Northeast; maximum existing 5% grade to Sixth Avenue Northeast; proposed 5% grade to 2.8 foot cut at Fifth Avenue Northeast; proposed 5% grade to 3.4 foot cut at Fourth Avenue Northeast; proposed 4% grade to 7 foot cut at Latona Place; proposed 4% grade to grade at Thackeray Place; existing 0.4% grade to grade at Second Avenue Northeast.

DIAGONAL: Proposed 2% grade to grade at East Forty-sixth Street; proposed 3.9% grade to grade at Eastern Avenue; proposed 4.3% grade to grade at North Forty-fifth Street.

NORTH FORTY-FIFTH STREET: Grade at Sunnyside Avenue; maximum existing 2.6% grade to Meridian Avenue.

DIAGONAL: Existing grade at Densmore Avenue; proposed 3.1% to 1 foot cut at North Forty-sixth Street; proposed 3.1% to grade at North Forty-seventh Street; proposed 1.5% grade to an overhead crossing at Interlaken Avenue and North Forty-eighth Street, and at Stone Avenue and North Forty-ninth Street.

NORTH FORTY-NINTH STREET: Proposed 2.5% approach from overhead crossing at Stone Avenue to grade at Midvale Avenue, also grade connection, proposed 3.9% grade on north side of incline between Stone Avenue and Midvale Avenue; existing 3.4% Woodland Park Avenue.

DIAGONAL: Grade at Woodland Park Avenue; proposed 5% grade, to grade at North Forty-eighth Street and Whitman Avenue; proposed 5% grade to 1.0 foot fill at North Forty-seventh Street; proposed 5% grade at North Forty-sixth Street and Aurora Avenue.

NORTH FORTY-SIXTH STREET: Existing grade at Aurora Avenue; maximum existing 7.0% grade to Greenwood Avenue.

DIAGONAL: Proposed 7% grade to 3.0 foot cut at Palatine Avenue; proposed 7% grade to 4.5 foot cut at First Avenue Northwest and North Forty-seventh Street; pro-

posed 7% grade across ungraded territory to 6.5 foot cut at Third Avenue Northwest and West Fifty-second Street; proposed 7% grade to 1.7 foot fill at West Fifty-third Street; proposed 7% grade to 13.5 foot fill at West Fifty-fourth Street; proposed 7% grade to grade at West Fifty-fifth Street and Sixth Avenue Northwest, on south.

WEST FIFTY-FIFTH STREET: Grade at Sixth Avenue Northwest; maximum existing 7% grade to Eighth Avenue Northwest.

MARKET STREET: Maximum existing 3% grade to Twenty-fourth Avenue Northwest; maximum proposed 1.8% grade to Thirty-second Avenue Northwest; proposed 0.7% grade to crossing under highway bridge at Seaview Avenue.

SEAVIEW AVENUE: Proposed (lower road) 1.2% grade to crossing *over* Great Northern right-of-way at West Sixtieth Street; proposed (upper roadway) 5% grade to West Fifty-sixth Street; proposed (upper roadway) 2% grade to crossing *over* Great Northern Railway at West Sixtieth Street; maximum proposed 3.0% grade to West Eighty-fifth Street.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Map No. 11, are to be of the width there shown.

HIGHWAY NO. 16

BLEWETT STREET: Existing width, 80 feet, Fremont Avenue to Stone Way; existing width, 60 feet; proposed width, 80 feet, all off north side between Stone Way and Bagley Avenue.

BRITNALL PLACE: Existing 25 foot street; proposed width, 50 feet between Tenth Avenue Northeast and Fifteenth Avenue Northeast.

GRADES

BLEWETT STREET: Owing to the possibility of a regrade along this street no definite rate of grade can be proposed at this time, but no difficulty should be experienced in keeping these rates under 3%.

BRITNALL PLACE: Grade at Tenth Avenue Northeast, maximum existing grade 1.0%.

PACIFIC PLACE: Existing width, 50 feet from Blewett Street to Sixth Avenue Northeast, except a proposed 80 foot widening, only between North Thirty-seventh Street and Second Avenue Northeast, for double roadway; the lower being inclined to a crossing under the Northern Pacific Railway at Northlake Avenue and North Thirty-eighth Street.

EAST FORTIETH STREET: The existing width and grade along the lower roadway is maintained between Sixth Avenue Northeast and Tenth Avenue Northeast.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Map No. 13, are to be of the widths there shown.

HIGHWAY NO. 17

TWENTY-THIRD AVENUE WEST: Existing width, 100 feet, West Garfield to West Lee Streets.

WEST LEE STREET: Existing width, 100 feet, Twenty-third Avenue West to Thirtieth Avenue West.

LOGAN AVENUE: Existing width, 100 feet, Thirtieth Avenue West to Thirty-third Avenue West.

THIRTY-THIRD AVENUE WEST: Proposed 90 feet in width, 60 feet west of and parallel to the east margin, being the west line of Sec. 23, T. 25 N., R. 3 E., from Logan Avenue to about 2,200 feet north thereof; thence Diagonal, proposed width, 90 feet to Thirty-third Avenue West and West Ray Street.

THIRTY-THIRD AVENUE WEST: Existing width, 66 feet; proposed width, 90 feet from West Ray Street to 165 feet north of West Bertona Street.

REVERSE CURVE: Proposed width, 90 feet, curve to left and right respectively, both radii 740 feet to tangent on Thirty-fourth Avenue West at 170 feet south of Emerson Street.

THIRTY-FOURTH AVENUE WEST AND THIRTY-FOURTH AVENUE WEST PRODUCED NINETY FEET WIDE: Existing width, 100 feet from point of tangent of reverse curve to Government Way; proposed 90 feet from Government Way to Lawton Place.

GRADES: Maximum existing grade under 3.0% on Twenty-third Avenue West, West Lee Street and Logan Avenue.

THIRTY-THIRD AVENUE WEST: Maximum proposed grade 5%, Logan Avenue to about 2,200 feet north thereof; maximum proposed grade under 3% on the diagonal, Thirty-third Avenue West, the reverse curve, and Thirty-fourth Avenue West to Elmore Street; maximum proposed 5% grade to Lawton Place.

Such portions of this highway as are included in the plan for the development of the waterfront as shown on Maps Nos. 10 and 11, are to be of the widths there shown.

HIGHWAY NO. 19

CURVE: Lying west of Taylor Avenue, and connecting the intersections of Prospect Street and Taylor Avenue with Ward Place and Taylor Avenue.

SOUTHEASTERLY DIAGONAL: Proposed width, 66 feet, extending from Taylor Avenue to Denny Way, crossing Dexter Avenue symmetrical with Broad Street.

DENNY WAY: Existing width, 66 feet from Fairview Avenue to Pontius Avenue; existing width, 66 feet; proposed width, 94 feet to Eastlake Avenue. Additional width is for roadway on sides of elevated.

MELROSE PLACE: Existing width, 66 feet, Denny Way to Melrose Avenue and a proposed extension 80 feet wide to East Olive Street and Bellevue Avenue from the east.

SOUTHEAST DIAGONAL: Proposed width, 66 feet, connecting intersections of East Olive Street and Bellevue Avenue with East Pike Street and Belmont Avenue.

EAST PIKE STREET: Existing width, 76 feet, Summit Avenue to Tenth Avenue.

SOUTHEAST DIAGONAL: Proposed width, 66 feet, connecting the intersections of East Pike Street and Tenth Avenue with East Jefferson Street and Fourteenth Avenue; thence along a curve to the left (minimum width of proposed street 66 feet), radius, 1,020 feet through 26°; thence along a tangent to said curve to the intersection of Twentieth Avenue South and Washington Street; thence southeasterly to a point on the center line of Jackson Street about 115 feet east of the intersection of Twenty-third Avenue South; thence by a curve to the left, radius 670 feet through 25° tangent to Jackson Street.

JACKSON STREET: Existing width, 66 feet, Twenty-fourth Avenue South to about 110 feet east of Twenty-sixth Avenue South; thence by a curve to the right, radius 260 feet through 63° 50′ to

DIAGONAL SOUTHEAST: Proposed width, 66 feet, connecting point of tangent of last curve with Yakima Place and Charles Street.

YAKIMA PLACE: Existing width, 60 feet; proposed width, 66 feet from Charles Street to Norman Street.

YAKIMA PLACE PRODUCED: Proposed width, 66 feet from Norman Street to Thirty-first Avenue South, connecting with a curve of 720 feet radius.

GRADES

CURVE: West of Taylor Avenue as described above, 8% proposed.

DIAGONAL SOUTHEAST: Proposed 8% Taylor Avenue to Seventh Avenue North. Elevated roadway from Eighth Avenue North to Boren Avenue; proposed 3% or less, Dexter Avenue to Ninth Avenue North; proposed maximum 5% to Denny Way.

DENNY WAY: Existing grade under 3% between Fairview and Eastlake Avenues. An approach to the proposed viaduct begins at Pontius Avenue, ascending on 5% grade crossing over Stewart Street and Eastlake Avenue.

MELROSE PLACE: Proposed viaduct with overhead crossing at Eastlake Avenue, ascending on 5% to grade at Melrose Avenue.

SOUTHEAST DIAGONAL AND MELROSE PLACE PRODUCED: Proposed 7% to East Pike Street.

EAST PIKE STREET: Existing grades under 3% to Tenth Avenue.

SOUTHEAST DIAGONAL: Proposed 3% grade or less from East Pike Street and Tenth Avenue to Fifteenth Avenue; proposed maximum 5% grade to Jackson Street.

JACKSON STREET: Maximum existing grade 5.0% to Twenty-seventh Avenue South.

DIAGONAL SOUTHEAST: Proposed grade 3% or less, Jackson Street and Twenty-seventh Avenue South to Yakima Place and Charles Street.

YAKIMA PLACE: Existing grade between 3% and 5%.

YAKIMA PLACE PRODUCED: Proposed grade 3% or less to Judkins Street.

HIGHWAY NO. 20

ELEVENTH AVENUE AND ELEVENTH AVENUE NORTH: Existing width, 66 feet, East Union to East John Street.

DIAGONAL: Proposed width 60 feet connecting intersections of East John Street and Eleventh Avenue North with East Thomas Street and Federal Avenue (west intersection).

FEDERAL AVENUE: Existing width, 59 feet, East Thomas Street to East Roy Street; existing width, 60 feet, East Roy Street to East Lynn Street.

EAST LYNN STREET: Existing width, 57 feet, Federal Avenue to Tenth Avenue North.

TENTH AVENUE NORTH: Existing width, 60 feet, East Lynn Street to Roanoke Street.

ROANOKE STREET: Existing width, 75 feet, Tenth Avenue North to Harvard Avenue North.

HARVARD AVENUE NORTH: Existing width, 75 feet, Roanoke Street to Shelby Street.

SHELBY STREET: Existing width, 75 feet, Harvard Avenue North to Franklin Avenue.

FRANKLIN AVENUE: Existing width, 75 feet, Shelby Street to Harvard Avenue North.

HARVARD AVENUE NORTH: Existing width, 75 feet, Franklin Avenue to Eastlake Avenue.

GRADES

ELEVENTH AVENUE AND ELEVENTH AVENUE NORTH: Maximum existing 2.3%, East Union to East John Street.

DIAGONAL: Proposed 2.3% to grade at East Thomas Street.

FEDERAL AVENUE: Maximum existing 6.3% to East Lynn Street.

EAST LYNN STREET: Existing 2.5%, Federal Avenue to Tenth Avenue North.

TENTH AVENUE NORTH: Maximum existing 7.7% to Roanoke Street.

ROANOKE STREET: Maximum existing 3.0% to Harvard Avenue North.

HARVARD AVENUE NORTH: Maximum existing 3.9% to Shelby Street.

SHELBY STREET: Existing 2.0% to Franklin Avenue.

FRANKLIN AVENUE: Existing 7.0% to Harvard Avenue North.

HARVARD AVENUE NORTH: Existing 6.0% to Eastlake Avenue.

HIGHWAY NO. 21

This highway is all shown on waterfront map of Madison Street Vicinity, and West Shore of Lake Washington, and runs from near intersection of Forty-second Avenue North and East Galer Street to a connection with Highway No. 13, at the intersection of East McGraw Street and Twenty-seventh Avenue North.

GRADES: The grades should not exeeed 3%.

HIGHWAY NO. 22

DEARBORN STREET: Existing width, 90 feet from Fifth Avenue South to Rainier Avenue.

PREFONTAINE PLACE EXTENSION: Proposed width, 90 feet, connecting the intersection of Dearborn Street and Ninth Avenue South and Washington Street and Fourth Avenue South.

GRADES

DEARBORN STREET: Existing grades under 3% throughout.

NORTHWESTERLY DIAGONAL: Proposed grades 3% or less.

HIGHWAY NO. 23

RAINIER AVENUE: Existing width, 80 feet; proposed width, 84 feet from about Fifty-ninth Avenue South, produced north to Fifty-first Avenue South; thence northwesterly with a proposed width of 84 feet to the intersection of Renton Avenue and Henderson Street; thence west 270 feet to the point of a curve to the right, radius 710 feet through 50° 30′; thence northwesterly along a tangent to said curve 240 feet to the point of a curve to the right, radius 400 feet, through 40° to a point of reverse curve; thence along a curve to the left, radius 310 feet, through 81° to a point of a compound curve; thence along a curve to the left, radius 1,135 feet, through 13° 45′ to a point of a compound curve; thence along a curve to the left, radius 915 feet, through 27° to a point of reverse curve; thence along a curve to the right, radius 530 feet through 47° to a point of a compound curve; thence along a curve to the right, radius 465 feet, through 37° 45′; thence northwesterly, proposed width 80 feet along a tangent to said curve 1,280 feet to the point of a curve to the right, radius 450 feet, through 23° 30′; thence northwesterly (crossing the south end of Sec. 28, T. 24 N., R. 4 E., about 130 feet west of the southwest corner thereof) 1,105 feet to the point of a curve to the left, radius 435 feet, through 57°; thence west along a tangent to said curve 210 feet to the point of a curve to the right, radius 230 feet through 64°, tangent to Highway No. 48.

GRADES: The grades along the course of this highway are 5% or less.

BEACON AVENUE BRANCH: Existing width, 66 feet or 80 feet; proposed, 106 feet, Cloverdale Street to Kenyon Street; proposed, 126 feet to Spokane Street; thence by a proposed 84 foot street on a reverse curve, radius 500 feet, tangent to Seattle Boulevard produced from Horton Street to Massachusetts Street.

SPEEDWAY DRIVE PRODUCED: Proposed width, 84 feet. Beginning at the north line of Beacon Avenue produced; thence south 620 feet to the point of a curve to the left, radius 1,170 feet, through 21° 30′; thence southeasterly along a tangent (crossing the north line of Sec. 3, T. 23 N., R. 4 E., about 180 feet east of the northwest quarter thereof) about 2,980 feet to the point of a curve to the right, radius 1,210 feet through 65° 50′.

SOUTHEASTERN BRANCH: Beginning at the point of a curve, radius 320 feet on Highway No. 48 in the northwest quarter of Sec. 3, T. 23 N., R. 4 E., and extending thence south 2,175 feet to the point of a curve to the left, radius 2,950 feet through 10° 30′; thence southeasterly crossing the south line of said Sec. 3 about 1,420 feet west of the southeast corner thereof; the continuation of this highway extends in a southeasterly direction following the topography to about the southeast corner of Sec. 14, T. 23 N., R. 4 E., joining Highway No. 60.

GRADES: The proposed grades are all 5% or less.

HIGHWAY NO. 24

HIGHWAY AND BOULEVARD: Proposed width, 120 feet, beginning at the south line of Sec. 30, T. 23 N., R. 5 E., and extending thence north along the center line of said section to the north line thereof, and along the center line of Sections 19 and 18, T. 23 N.,

R. 5 E., to the north line of Sec. 18; proposed width, 160 feet, beginning at the quarter corner on the north line of Sec. 18, T. 23 N., R. 5 E., and extending thence northwesterly about 4,050 feet to the point of a curve to the left, radius 1,690 feet, through 38°; thence northwesterly along a tangent to said curve 4,910 feet to the point of a curve to the left, radius 850 feet, through 39°; thence westerly along Rainier Avenue (widening all off the north side) about 1,370 feet to the point of a curve to the right, radius 875 feet through 49°; thence northwesterly along a line parallel to and lying 120 feet northerly of the present center line of Rainier Avenue to the point of a curve (150 feet north of the north line of Norfolk Street) to the right, radius 2,970 feet through 12° to a point of reverse curve; thence along a curve to the left, radius 2,260 feet through 15° 50′; thence along Rainier Avenue (widening all off northerly side) and Rainier Avenue produced to the point of a curve 1,080 feet northwesterly from the northerly line of Carver Street to the right, radius 1,235 feet through 60°.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Map No. 18, are to be of the widths there shown.

Lake Shore Branch (Boulevard): Proposed width, 160 feet. Beginning at the point of tangent of a curve already described and situated at about the intersection of Hamlet Avenue and Fifty-fifth Avenue South produced; thence north approximately along the Government meander line, crossing Kenyon Street, about 1,550 feet east of Rainier Avenue, continuing north 720 feet to the point of a curve to the right, radius 3,675 feet, through 9° 15′; thence northeasterly 1,410 feet to the point of a curve to the right, radius 3,355 feet through 8° 45′; thence northeasterly along a tangent to said curve crossing Graham Street about 1,125 feet east of Wilson Avenue, and continuing northeasterly about 225 feet to the point of a curve to the left, radius 1,650 feet through 37° 45′; thence northwesterly about 3,580 feet to the point of a curve to the left, radius 2,055 feet through 14° 45′; thence northwesterly along a tangent to said curve, crossing the north line of Sec. 23, T. 24 N., R. 4 E., about 1,150 feet east of the northwest corner thereof, continuing northwesterly, crossing Fifty-first Avenue South about 250 feet north of Genessee Street and continuing to the point of a curve to the left, radius 465 feet, through 57° 15′; thence west along the south margin of Charlestown Street to Forty-third Avenue South.

Beginning at about the intersection of Charlestown Street and Forty-third Avenue South, the continuation of this boulevard extends northwesterly about 1,200 feet to the point of a curve to the left, radius 2,050 feet through 10°; thence northwesterly along a tangent to said curve about 2,600 feet to the point of a curve to the left, radius 1,110 feet through 27° 25′; thence along a tangent 135 feet to the point of a curve to the right, radius 775 feet, through 46° 30′; thence north along a tangent 490 feet to the point of a curve to the right, radius 2,180 feet through 12°; thence along a tangent to said curve 200 feet to the point of a curve to the left, radius 2,030 feet through 11° 15′; thence north about 810 feet to the point of a curve to the left, radius 620 feet through 25° 30′; thence northwesterly 690 feet to the point of a curve to the right, radius 1,015 feet through 23° 30′; thence north along a tangent 570 feet to the point of a curve to the right, radius 1,760 feet through 12°; thence northeasterly along a tangent 800 feet to the point of a curve to the right, radius, 1,690 feet through 18° 45′; thence northeasterly 220 feet to the point of a curve to the left, radius 870 feet through 20°; thence northeasterly 525 feet to the point of a curve to the right, radius 1,240 feet through 18° 15′ to a point of reverse curve; thence along a curve to the left, radius 820 feet through 22° 30′; thence northeasterly along a tangent to said curve 1,170 feet to the point of a curve to the right, radius 730 feet through 28° 30′ to a point of reverse curve; thence along a curve to the left, radius 620 feet through 30° 40′; thence north along a tangent to said curve 400 feet to the point of a curve to the right, radius 970 feet through 22° 10′ to a point of reverse curve; thence along a curve to the left, radius 1,080 feet through 38° 50′ to a point of reverse curve; thence along a curve to the right, radius 580 feet through 29° 30′; thence northeasterly along a tangent to said curve 420 feet to the point of a curve to the left, radius 1,190

feet through 12° 30′; thence north along a tangent to said curve 1,080 feet to the point of a curve to the left, radius 1,130 feet through 42° 15′ to a point of reverse curve; thence along a curve to the right, radius 1,020 feet through 80°; thence northeasterly 1,100 feet to the point of a curve to the left, radius 1,355 feet through 11° 45′; thence northeasterly along a tangent to said curve 640 feet to the point of a curve to the left, radius 1,365 feet through 20° tangent to Laurel Shade Avenue about 130 feet north of East Lee Street.

The above description is to be read in connection with Waterfront Maps showing proposed development in the vicinity of Renton, Rainier Beach, Bay Street and Madison Street. Where detail maps are shown, the Highway or Boulevard will conform to them.

LAUREL SHADE AVENUE: Existing width, 80 feet; proposed width, 120 feet, all off west side and produced to a point 925 feet north of the north margin of East Newton Street; thence along a curve to the left, radius 500 feet through 46°; thence northwesterly along a tangent (proposed width, 150 feet) about 760 feet to the point of a curve to the left, radius 610 feet through 44° 20′; thence along the street platted in the shore lands, widening same to 150 feet, all off south side, and this street produced to Twenty-sixth Avenue North produced; thence continuing west along Roanoke Street; proposed width, 90 feet, all off north side, to East Montlake Place.

NORTH WESTERN BRANCH: Proposed width, 90 feet. Beginning at about the intersection of Henderson Street and Fifty-fourth Avenue South produced; thence northwesterly to the west line of Sec. 35, T. 24 N., R. 4 E., about 1,420 feet south of the northwest corner thereof and crossing Kenyon Street about 970 feet west of Fifty-first Avenue South continuing to an angle point on Forty-fourth Avenue South at the alley between Fontanelle and Webster Streets; thence northwesterly about 820 feet to an angle point near Forty-second Avenue South and Othello Street; thence northwesterly crossing the intersection of Thirtieth Avenue South and Alaska Street continuing about 2,120 feet to the point of a curve to the right, radius 2,229 feet through 10°; thence along a tangent to said curve to the point of a curve (about 35 feet east and 115 feet north of the intersection of Twenty-fifth Avenue South and Winthrop Street) to the left, radius 4,765 feet through 16° 45′; thence northwesterly parallel to Rainier Avenue and 585 feet west thereof measured at right angles from center lines continuing to Twelfth Avenue South. Here an angle is introduced, the extension of this street with a width of 90 feet, connecting with the approximate intersection of Yesler Way and Fir Street, being the prolongation of Highway No. 38.

GRADES: The proposed grades are all 3% or less.

HIGHWAY NO. 25

FORTY-SECOND AVENUE SOUTH: Proposed width, 70 feet, Oregon Street to Genessee Street.

NORTHEASTERLY DIAGONAL: Proposed width, 70 feet, approximately connecting the intersection of Forty-second Avenue South and Genessee Street with Forty-third Avenue South and Andover Street.

FORTY-THIRD AVENUE SOUTH: Existing width, 66 feet; proposed width, 120 feet, all off West Side, Dakota Street to Charlestown Street.

CONOVER WAY BRANCH: Existing width, 50 feet; proposed width, 70 feet from Forty-second Avenue South to Thirty-eighth Avenue South; thence along a proposed diagonal 70 feet wide to the intersection of Alaska Street and Rainier Avenue.

GRADES: The grades proposed for this highway and its branch do not exceed 3%.

HIGHWAY NO. 26

SEATTLE BOULEVARD: Existing width, 100 feet, Fourth Avenue South to Massachusetts Street.

NINTH AVENUE SOUTH: Existing width, 100 feet, Massachusetts Street to Hinds Street.

SEATTLE BOULEVARD: Existing width, 150 feet, Hinds Street to Spokane Street.

SPOKANE STREET AND WEST SPOKANE STREET PRODUCED: Existing and proposed width, 150 feet from Seattle Boulevard to Alki Avenue.

ALKI AVENUE: Existing width, variable; proposed width as shown on waterfront development, West Seattle Sheet, from Spokane Avenue to Sixty-first Avenue Southwest; thence along Sixty-first Avenue Southwest across Alki Point to Carroll Street. A commercial roadway 160 feet wide extends through the tide-lands practically paralleling the harbor line and 400 feet easterly thereof to about opposite the junction of Lowman Drive and Alki Avenue; thence continuing south aproximately parallel to and distant 250 feet east of the harbor line to a point about 1,000 feet south of the north line of Sec. 2, T. 23 N., R. 3 E. At this point the highway narrows to a width of 120 feet continuing parallel to and 200 feet easterly of the harbor line, to the south line of Sec. 2, T. 23 N., R. 3 E. From this point the lack of definite information prevents the accurate projection of the street, but it should continue substantially along the same lines to the southerly limit of the area covered by this report.

GRADES: Proposed grades 3% or less. (See Maps Nos. 5 and 6.)

HIGHWAY NO. 30

Extension of City Highway No. 5. Proposed width, 160 feet, beginning at the intersection of Sixth Avenue Northwest and West Eighty-fifth Street, and following the line of Sixth Avenue Northwest, produced north to about the center of Sec. 36, T. 26 N., R. 3 E.; thence along a curve to the right, radius 2,865 feet through 18° 15′; thence along a tangent to said curve to the point of a curve to the left, radius 2,865 feet through 18° 11′, crossing the north line of Sec. 36, T. 26 N., R. 3 E., about 1,130 feet west of the northeast corner thereof; thence north to Sec. 25, T. 26 N., R. 3 E., approximately paralleling Greenwood Avenue, crossing the north line of said Sec. 25 about 1,065 feet west of the northeast corner thereof; thence continuing north 495 feet to the point of a curve to the right, radius 1,146 feet through 26°; thence along a tangent to said curve 1,840 feet to the point of a curve to the left, radius 1,840 feet to the point of a curve to the left, radius 1,146 feet through 26° 10′ tangent to Greenwood Avenue; thence north along Greenwood Avenue about 200 feet; thence northeasterly by a curve to the right, radius 2,865 feet through 31° 25′; thence northeasterly along a tangent to said curve 1,250 feet to a curve to the left, radius 2,865 feet through 26° 15′ (crossing the north line of Sec. 19, T. 26 N., R. 4 E., about 700 feet east of the northwest corner thereof). This portion of Highway No. 30 is to be a boulevard. (See Boulevards.) Proposed width, 90 feet; thence north through the west one-half of Sec. 18, T. 26 N., R. 4 E., crossing the north line of said section about 1,800 feet east of the northwest corner thereof; thence north through the west half of Sec. 7, T. 26 N., R. 4 E., crossing the north line of said section at about 1,800 feet east of the northwest corner thereof; thence north through the west half of Sec. 6, T. 26 N., R. 4 E., to the east and west center line of said section; thence along a curved line in a northeasterly direction, crossing the north line of said section about 2,200 feet east of the northwest corner thereof.

NORTHWESTERN BRANCH: Proposed width, 84 feet. Beginning with a curve to the left (in the NW¼ Sec. 18, T. 26 N., R. 4 E.), radius 1,042 feet through 69° 36′; thence northwesterly 500 feet along a tangent to said curve; thence by a curve to the right, (crossing the north line of Sec. 18, T. 26 N., R. 4 E., about 580 feet east of the northwest corner thereof), radius 2,865 feet through 20°, crossing the east line of Sec. 12, T. 26 N., R. 3 E., at about 400 feet north of the southeast corner thereof; thence by a curve to the right, radius 955 feet through 98° 17′, crossing the east line of said section about 1,950 feet north of the southeast corner thereof; thence northeasterly along a tangent 400 feet; thence by a curve to the left, radius 716 feet through 65° 23′; thence northwesterly along a tangent 2,100 feet to a curve to the left, (crossing 30 feet west of the northwest corner of Sec. 7, T. 26 N., R. 4 E.,), radius 573 feet through 57° 46′; thence northwesterly along

a tangent to said curve, 350 feet; thence along a curve to the right, radius 716 feet through 62° 17′; proposed width, 90 feet north of the east and west center line of Sec. 1, T. 26 N., R. 3 E.; thence northwesterly through the east half of said section 4,100 feet to a curve to the left, radius 637 feet through 44° 16′, crossing the north line of said section about 1,800 feet west of the northeast corner thereof; thence northwesterly about 110 feet to the Snohomish County line, crossing the north line of Sec. 1, T. 26 N., R. 3 E., about 1,875 feet west of the northeast corner thereof.

NORTHEASTERN BRANCH: Proposed width, 160 feet. Beginning at the point of a curve in the Main Highway in the SW¼ of Sec. 18, T. 26 N., R. 4 E., and extending northeasterly across the center of said section to the northeast corner thereof, and produced to connect with Highway No. 31. This portion of Highway No. 30 is to be a boulevard. (See Boulevards.)

HIGHWAY NO. 31

NORTHWESTERN BRANCH: Proposed width, 90 feet. Beginning at the point of a curve on the main highway, just south of the north line of Sec. 17, T. 26 N., R. 4 E., and extending along a curve to the left, radius 955 feet, through 37° 30′; thence northwesterly along a tangent to said curve, crossing the east line of Sec. 7, T. 26 N., R. 4 E., about 1,200 feet north of the southeast corner of said Section 7; thence continued northwesterly to the point of a curve to the right, radius 2,865 feet through 22°; thence 1,010 feet along a tangent to said curve to the point of a curve to the left radius 2,865 feet through 24° 30′; thence northwesterly crossing the north line of Sec. 7, T. 26 N., R. 4 E., about 2,200 feet east of the northwest corner thereof, continuing northwesterly, and crossing the west line of Sec. 6, T. 26 N., R. 4 E., about 2,000 feet north of the southwest corner of said section, continuing northwesterly to an intersection with Highway No. 30, (Western Branch).

EAST AND WEST CONNECTION: Proposed width, 84 feet, extending along the north line of King County from about the center of Sec. 1, T. 26 N., R. 3 E., to about the northeast corner of Sec. 5, T. 26 N., R. 4 E.

HIGHWAY NO. 32

Connecting Highways Nos. 31 and 33. Proposed width, 84 feet.

EAST BRANCH: Beginning on Ashworth Avenue produced, about 1,650 feet north of North Eighty-fifth Street; thence along a curve to the right, radius 574 feet through 49° 00′; thence northeasterly along a tangent to said curve, crossing the east line of Sec. 31, T. 26 N., R. 4 E., about 2,160 feet south of the northeast corner of said section; thence continued northeasterly 2,000 feet to the point of a curve to the right, radius 5,730 feet, through 4° 40′; thence northeasterly about 800 feet crossing the north line of Sec. 32, T. 26 N., R. 4 E., about 2,500 feet east of the northwest corner of said section; thence continuing northeasterly 260 feet to the point of a curve to the right; thence along said curve to the right, radius 1,910 feet through 84° 30′, crossing 70 feet west of the northwest corner of said section; thence extended southeasterly along a tangent to said curve 2,630 feet to a curve to the right, radius 500 feet through 58° 36′, tangent to Highway No. 33, at about the east and west center line of Sec. 33, T. 26 N., R. 4 E.; proposed width, 84 feet. Beginning at Sixth Avenue Northwest and West Eighty-fifth Street; thence along West Eighty-fifth Street to First Avenue Northwest and West Eighty-fifth Street; thence along a curve to the left, (tangent at Greenwood Avenue and North Eighty-seventh Street) to a point of a reverse curve; thence along a curve to the right, tangent to North Ninetieth Street; thence along North Ninetieth Street to about Stone Avenue; thence northeasterly to a connection with the Main Highway.

GRADES: The course of this highway except the last section is along a surveyed line made upon the ground, the grades proposed are all 3% or less.

HIGHWAY NO. 33

PROPOSED HIGHWAY AND BOULEVARD: Being the extension of City Highway No. 13. Proposed width, 90 feet to Eighty-fifth Street; thence 160 feet to the intersection of Twenty-fifth Avenue Northeast and East Fifty-fourth Street, and extending thence northerly along Twenty-fifth Avenue Northeast to East Eightieth Street; thence along a curve to the left, radius 5,730 feet through 14° 06′, crossing 30 feet west of the quarter corner on the south line of Sec. 33, T. 26 N., R. 4 E.; thence northeasterly 798 feet along a tangent to said curve to the point of a curve to the left, radius 1,910 feet through 25° 35′; thence northeasterly along a tangent to said curve 350 feet; thence along a curve to the right, radius 573 feet through 55° 54′; thence northeasterly along a tangent to said curve 942 feet; thence along a curve to the right, radius 1,432 feet through 16° 00′; thence along a tangent to said curve 400 feet to the point of a curve to the left, radius 2,865 feet through 27° 34′; thence northerly along a tangent to said curve, crossing the north line of Sec. 33, T. 26 N., R. 4 E., 80 feet east of the quarter corner; continuing northerly 1,208 feet to the point of curve to the right, radius, 1,910 feet through 40° 38′; thence northeasterly 1,650 feet to the point of a curve to the left, radius 1,432 feet through 44° 34′.

EASTERN BRANCH: Proposed width, 160 feet; thence northerly along a tangent to said curve, crossing the north line of Section 28, T. 26 N., R. 4 E., about 404 feet west of the northeast corner thereof; thence continuing north, crossing the north line of Sec. 21, T. 26 N., R. 4 E., about 347 feet west of the northeast corner of said Section 21; thence north 675 feet to the point of a curve to the right, radius 1,910 feet through 43° 35′, crossing the east line of Sec. 16, T. 26 N., R. 4 E., about 1,810 feet north of the southeast corner of said Section 16; thence along a tangent to said curve 880 feet; thence along a curve to the left, radius 1,146 feet through 36° 30′; thence along a tangent to said curve 1,085 feet to the point of a curve to the right, radius 2,865 feet through 19° 51′, crossing the north line of Sec. 15, T. 26 N., R. 4 E., 1,535 feet east of the northwest corner of said Section 15; thence northeasterly along a tangent to said curve 782 feet to the point of a curve to the right, radius 1,146 feet through 32° 10′; thence northeasterly along a tangent to said curve, 1,535 feet to the point of a curve to the left, radius 4,584 feet through 19° 02′; thence along a tangent to said curve 200 feet to the point of a curve to the right, radius 955 feet through 36° 03′; thence along a tangent to said curve 832 feet; thence along a curve to the right, radius 1,910 feet through 15° 54′; thence along a tangent to said curve 350 feet; thence along a curve to the left, radius 5,730 feet through 7° 46′; thence along a tangent to said curve 865 feet; thence along a curve to the right, radius 5,730 feet through 19° 42′, crossing the east line of Sec. 11, T. 26 N., R. 4 E., 1,465 feet south of the northeast corner of said Section 11; thence southeasterly along a tangent to said curve 3,390 feet to the point of a curve to the right, radius 1,910 feet through 15° 06′; thence along a tangent to said curve 730 feet to the point of a curve to the left, radius 5,730 feet through 4° 01′; thence southeasterly along a tangent to said curve 750 feet, crossing the east line of Sec. 12, T. 26 N., R. 4 E., 372 feet south of the quarter corner between Sections 12 and 17; thence along a curve to the left, radius 1,146 feet through 21° 43′; thence along a tangent to said curve 655 feet; thence along a curve to the right, radius 1,910 feet through 30° 59′; thence along a tangent to said curve 937 feet; thence along a curve to the left, radius 522 feet through 152° 56′; thence along a tangent to said curve 300 feet; thence along a curve to the right, radius 1,146 feet through 43° 00′; thence along a tangent to said curve 730 feet; thence along a curve to the right, radius 1,274 feet through 69° 55′; thence along a tangent to said curve 53 feet to a point on the east line of Sec. 7, T. 26 N., R. 5 E., 742 feet south of the northeast corner of said Section 7, said tangent being the center line of Main Street in Bothell.

Such portions of this highway as are included in the plan for development of the waterfront, as shown on Map No. 15, are to be of the widths there shown.

NORTHWESTERN BRANCH: Proposed width, 160 feet. Beginning at the point of the curve in the main highway (in the northeast quarter of Section 28, T. 26 N., R. 4 E.); thence along a curve to the left, radius 500 feet through 84° 30′; thence northwesterly along a tangent to said curve, crossing the north line of Sec. 28, T. 26 N., R. 4 E., about 1,888 feet west of the northeast corner of said Section 28; thence continuing northwesterly through Sec. 21, T. 26 N., R. 4 E., crossing the west line of said Section 21 about 1,383 feet south of the northwest corner thereof; thence continuing 372 feet to the point of a curve to the left, radius 717 feet through 39° 42′; thence 728 feet along a tangent to said curve; thence along a curve to the right, radius 1,910 feet through 31° 30′; thence along a tangent to the curve to a point 30 feet west of the quarter corner between Sections 17 and 20; thence along a curve to the right making a suitable connection to Central Avenue.

A connection with a proposed width of 84 feet in an approximately east and west direction, connecting the two branches of this highway begins on a point on the Main Highway, in the SE¼ of Sec. 16, T. 26 N., R. 4 E., about 190 feet north of the south line thereof; thence along a curve to the left, radius 574 feet through 90° to a point of compound curve; thence along a curve to the left, radius 1,146 feet through 51°; thence southwesterly along a tangent to said curve 1,529 feet to the point of a curve to the right, radius 574 feet through 117° 45′; thence along a tangent to said curve 189 feet to the point of a curve to the left, radius 574 feet through 78° 10′; thence along a tangent to said curve 287 feet to the point of a curve to the right, radius 1,910 feet through 23° 27′, crossing the west line of Sec. 21, T. 26 N., R. 4 E., 350 feet south of the northwest corner thereof; thence northwesterly along a tangent to said curve 680 feet to the point of a curve to the left, radius 717 feet through 44°; thence along a tangent to said curve 260 feet to the point of a curve to the right, radius 478 feet through 65° 08′ and tangent to the main branch.

GRADES: The courses of these highways are along lines surveyed upon the ground, and the proposed grades are all 3% or less.

HIGHWAY NO. 34

Proposed width, 84 feet. Beginning on the curve in Highway No. 33, in the SW¼ of Sec. 10, T. 26 N., R. 4 E.; thence along a curve to the left, radius 345 feet through 86° 05′; thence along a tangent to said curve 2,965 feet to the point of a curve to the left, radius 1,910 feet through 18° 44′; thence along a tangent to said curve 297 feet, crossing the west line of Sec. 10, T. 26 N., R. 4 E., about 720 feet south of the northwest corner of said Section 10; thence continuing northwesterly 810 feet to the point of a curve to the left, radius 574 feet through 45° 05′; thence southwesterly along a tangent to said curve 240 feet; thence along a curve to the right, radius 574 feet through 72° 20′, crossing the north line of Sec. 9, T. 26 N., R. 4 E., about 1,870 feet west of the northeast corner of said Section 9; thence northwesterly 1,683 feet along a tangent to said curve to the point of a curve to the left, radius 2,865 feet through 27° 25′; thence along a tangent to said curve 1,374 feet; thence along a curve to the right, radius 1,910 feet through 29° 43′, crossing Highway No. 31, and also the west line of Section 4, T. 26 N., R. 4 E., about 1,050 feet south of the northwest corner of said Section 4; thence northwesterly along a tangent to said curve 1,308 feet crossing the north line of Sec. 5, T. 26 N., R. 4 E., about 488 feet west of the northeast corner of said Section 5, continuing northwesterly 800 feet to the point of a curve to the left, radius 955 feet through 71° 55′; thence along a tangent to said curve about 1,023 feet to the east shore of Lake Ballinger.

GRADES: The course of this highway is along a surveyed line upon the ground and the proposed grades are all 3% or les.

HIGHWAY NO. 35

Proposed width 84 feet. Beginning at the curve on Highway No. 33, in the NE¼ of Sec. 11, T. 26 N., R. 4 E.; thence along a curve to the left, radius 687 feet, through 61°

30′; thence northeasterly along a tangent to said curve 1,130 feet, crossing the north line of said Section 11, 75 feet west of the northeast corner thereof; continuing northeasterly 650 feet to the point of a curve to the left, radius 1,910 feet, through 23° 45′; thence north along a tangent to said curve 1,050 feet to the point of a curve to the left, radius 5,730 feet, through 10° 45′; thence northwesterly along a tangent to said curve 1,840 feet to a point on the north line of Section 1, T. 26 N., R. 4 E., about 110 feet east of the northwest corner of said Section 1.

GRADES: The course of this highway is along a surveyed line upon the ground and the proposed grades are all 3% or less.

HIGHWAY NO. 36

Proposed width, 90 feet. Beginning on the east roadway of a double street in the University of Washington Campus, about 820 feet south of East Forty-sixth Street, and extending thence along a curve to the right, radius 1,035 feet, through 78° 37′ 58″ tangent to East Forty-fifth Street, at a point about 1,676 feet west of the northeast corner of Sec. 16, T. 25 N., R. 4 E.; thence east along East Forty-fifth Street about 1,850 feet to the point of a curve to the left, radius 750 feet through 55° 30′; thence northeasterly along a tangent to said curve, about 1,575 feet to the point of a curve to the right, radius 1,765 feet, through 15° 10′; thence northeasterly along a tangent to said curve, about 845 feet to the point of a curve to the right, radius 500 feet, through 31° 30′; thence easterly about 100 feet to the point of a curve to the right, radius 1,698 feet through 12° 30′; thence easterly about 440 feet to the point of a curve to the left, radius 478 feet, through 32° 20′ to a point of compound curve; thence along a curve to the left, radius 955 feet, through 39° 15′; thence along a tangent to said curve 540 feet; thence along a curve to the right, radius 716 feet, through 49° 20′; thence along a tangent to said curve, 283 feet (crossing the east line of Sec. 10, T. 25 N., R. 4 E., about 1,375 feet north of the east quarter corner); thence along a curve to the left, radius 716 feet, through 44° 20′; thence along a tangent to said curve 1,310 feet (crossing the north line of Sec. 11, T. 25 N., R. 4 E., about 1,130 feet east of the northwest corner thereof). (From this point north this route becomes a combined highway and boulevard, 160 feet wide); thence along a curve to the left, radius 2,865 feet, through 48° 30′; thence along a tangent to said curve 1,715 feet; thence along a curve to the left, radius 5,730 feet, through 21° 26′ to a point of compound curve (crossing the north line of Sec. 2, T. 25 N., R. 4 E., 512 feet east of the northwest corner thereof. Also crossing the east line of Sec. 34, T. 26 N., R. 4 E., 730 feet north of the southeast corner thereof); thence along a tangent to said curve 1,210 feet; thence along a curve to the right, radius 478 feet, through 94° 00′, to a point of compound curve; thence along a curve to the right, radius 686 feet, through 50° 30′; thence along a tangent to said curve 95 feet to the point of a curve to the left, radius 573 feet, through 64° 27′; thence north along a tangent to said curve 505 feet to the point of a curve to the left, radius 819 feet, through 37° 27′; thence northwesterly 200 feet along a tangent to said curve; thence along a curve to the right, radius 955 feet, through 30° 34′; thence 392 feet along a tangent to said curve.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Map No. 14, are to be of the widths there shown.

NORTHWESTERN BRANCH: Proposed width, 90 feet; thence along a curve to the left, radius 717 feet, through 47° 00′, crossing the north line of Sec. 34, T, 26 N., R. 4 E., about 620 feet east of the quarter corner between Sections 34 and 27; thence northwesterly along a tangent to said curve 871 feet; thence along a curve to the right, radius 478 feet, through 13° 33′; thence along a tangent to said curve 803 feet to the point of a curve to the right, radius 2,865 feet, through 11° 10′; thence northwesterly along a tangent to said curve 1,145 feet to the point of a curve to the left, radius 1,146 feet, through 40° 48′; thence northwesterly along a tangent to said curve 355 feet, crossing

the west line of Sec. 27, T. 26 N., R. 4 E., about 1,695 feet south of the northwest corner of said Section 27, continuing northwesterly 278 feet to the point of a curve to the right, radius 1,433 feet, through 28° 14′ tangent with Highway No. 33.

NORTHERN BRANCH: Proposed width, 90 feet. Beginning at a point of curve on the main highway 238 feet south of the north line of Sec. 34, T. 26 N., R. 4 E., and extending thence northwesterly along a tangent to said curve 3,619 feet; thence along a curve to the left, radius 2,292 feet, through 39° 05′; thence along a tangent to said curve 260 feet; thence along a curve to the right, radius 1,146 feet, through 56° 43′, crossing the north line of Sec. 27, T. 26 N., R. 4 E., 1,815 feet east of the northwest corner of said Section 27; thence along a tangent to said curve 155 feet; thence along a curve to the left, radius 573 feet, through 31° 00′; thence along a tangent to said curve 158 feet; thence along a curve to the right, radius 478 feet, through 55° 48′; thence along a tangent to said curve 330 feet; thence along a curve to the left, radius 637 feet, through 78° 30′; thence along a tangent to said curve 363 feet; thence along a curve to the right, radius 478 feet, through 47° 00′; thence along a tangent to said curve, 538 feet; thence along a curve to the left, radius 955 feet, through 29° 30′; thence northwesterly along a tangent to said curve 940 feet (crossing the north line of Sec. 22, T. 26 N., R. 4 E., 1,185 feet east of the northwest corner of said Section 22); thence 1,960 feet to the point of a curve to the right, radius 478 feet, through 68° 21′ to tangency with Highway No. 33.

GRADES: The courses of the highways are located from surveyed lines made upon the ground and the proposed grades are all 3% or less.

HIGHWAY NO. 38

SOUTHEASTERLY DIAGONAL: Proposed width, 84 feet, connecting the intersection of Fourth Avenue and Madison Street with Eighth Avenue and Spruce Street; thence to Fir Street and Yesler Way.

YESLER WAY: Existing width, 66 feet; proposed width, 84 feet, Fir Street to Tenth Avenue.

NORTHEASTERLY DIAGONAL: Proposed width, 84 feet, connecting the intersection of Tenth Avenue and Yesler Way with East Alder Street and Thirteenth Avenue and produced to Terrace Court; thence by a curve to the right, radius 425 feet, through 39°, to a point of compound curve; thence along a curve to the right, radius 240 feet, through 47°.

SOUTHEASTERLY DIAGONAL: Proposed width, 84 feet from the point of tangent of the curve last mentioned to the intersection of East Spruce Street and Seventeenth Avenue.

EAST SPRUCE STREET: Existing width, 60 feet; proposed width, 84 feet to the west margin of Twentieth Avenue.

NORTHEASTERLY DIAGONAL: Proposed width, 84 feet, beginning at the west margin of Twentieth Avenue, at East Spruce Street; thence along a curve to the left, radius 130 feet, through 81°; thence northeasterly along a tangent to said curve about 530 feet to the point of a curve to the right, radius 1,020 feet, through 39° 30′; thence northeasterly along a tangent to said curve about 400 feet to the point of a curve to the right, radius 1,420 feet, through 6° 30′; thence northeasterly along a tangent to said curve about 510 feet to the point of a curve to the left, radius 1,515 feet, through 23° 30′; thence northeasterly about 2,085 feet to the point of a curve to the right, radius 985 feet, through 16° 30′; thence northeasterly along a tangent to said curve, about 210 feet to the point of a curve to the left, radius 1,486 feet, through 14° 30′; thence northeasterly to an angle point southeasterly from the intersection of East Denny Way and Thirty-second Avenue.

THIRTY-SECOND AND ONE-HALF AVENUE: Proposed width, 84 feet from East Denny Way to 120 feet south of East John Street, midway between and approximately parallel to Thirty-second and Thirty-third Avenues.

CURVES, ETC.: Proposed widths, 84 feet, beginning at a point 120 feet south of East John Street, on Thirty-second and One-Half Avenue, and extending thence along a curve

to the right, radius 560 feet, through 53° 30′; thence northeasterly along a tangent to said curve, about 635 feet; thence along a curve to the left, radius 1,105 feet, through 41° 00′; thence northeasterly along a tangent to said curve 410 feet; thence along a curve to the right, radius 1,105 feet, through 50° 00′ to the point of reverse curve; thence along a curve to the left, radius 525 feet, through 65° tangent to the center line of Fortieth Avenue North, about 110 feet south of East Prospect Street.

FORTIETH AVENUE NORTH: Existing width, 84 feet, from point of tangent of last mentioned curve to East Madison Street.

EAST MADISON STREET: Existing width, 84 feet, from Fortieth Avenue North to Laurel Shade Avenue.

GRADES: The grades along this proposed highway intersect the streets and avenues crossed at practically their existing grades, and in no case exceed 5%.

HIGHWAY NO. 39

TWENTIETH AVENUE SOUTHWEST: Proposed width, 80 feet, from West Barton Street to West Edmunds Street.

WEST EDMUNDS STREET: Proposed width, 80 feet, from Twentieth Avenue Southwest to Seattle Boulevard produced.

SEATTLE BOULEVARD (EXISTING AND PRODUCED): Proposed width, 80 feet from West Edmunds to Ninth Avenue South.

SOUTHWESTERLY DIAGONAL: Proposed width, 80 feet, except tunnel section, which is 50 feet, extending southwesterly from the intersection of West Edmunds Street and Twentieth Avenue Southwest, to about the intersection of West Dawson Street and Twenty-fourth Avenue Southwest, if these streets were produced. One branch extends thence west to Twenty-sixth Avenue Southwest; another extends south to about West Raymond Street, and a connection with the main highway.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Map No. 7, are to be of the widths there shown.

GRADES: All grades 5% or less.

HIGHWAY NO. 40

SOUTHWEST DIAGONAL: Proposed width, 100 feet, along a line connecting intersections of Twenty-second Avenue Southwest and West Spokane Street with Twenty-eighth Avenue Southwest and West Genessee Street, but extending only to Twenty-sixth Avenue Southwest, connection to Twenty-sixth Avenue Southwest being effected by a curve of 780 feet radius.

TWENTY-SIXTH AVENUE SOUTHWEST: Existing width, 60 feet; proposed width, 100 feet from above angle point to a point about 100 feet north of West Findlay Street.

SOUTHEASTERLY DIAGONAL: Proposed width, 100 feet from above angle point to an angle point 240 feet south of West Juneau Street and Twenty-fourth Avenue Southwest.

TWENTY-FOURTH AVENUE SOUTHWEST (AND PRODUCED): Existing width, 60 feet; proposed width, 100 feet from above angle point to West Cloverdale Street. Proposed width, 84 feet to the center of NW¼ of NE¼ of Sec. 1, T. 23 N., R. 3 E.

SOUTHWESTERLY DIAGONAL: Proposed width, 84 feet from the last mentioned angle point following the ravine to the outlet on Puget Sound.

GRADES

SOUTHWEST DIAGONAL, TWENTY-EIGHTH AVENUE SOUTHWEST, SOUTHEAST DIAGONAL, AND TWENTY-FOURTH AVENUE SOUTHWEST: Proposed grade 3% or less.

SOUTHWESTERLY DIAGONAL: Proposed grade 5% or less to Puget Sound.

HIGHWAY NO. 41

THIRTIETH AVENUE SOUTHWEST: Existing width, variable; proposed width, 84 feet from West Spokane Street to Yancy Street; thence southwesterly to about the intersection of West Oregon Street and Thirty-second Avenue Southwest, (both produced); thence along West Oregon Street produced with a proposed width of 84 feet to Thirty-seventh Avenue Southwest; thence southwesterly to the intersection of Thirty-ninth Avenue Southwest and West Alaska Street.

THIRTY-NINTH AVENUE SOUTHWEST: Existing width, 80 feet; proposed width, 84 feet; West Alaska Street to West Juneau Street.

SOUTHWESTERLY DIAGONAL: Proposed width, 84 feet, connecting intersections of Thirty-ninth Avenue Southwest and West Juneau Street, and Forty-first Avenue Southwest and West Graham Street; thence to West Morgan Street and California Avenue.

WEST MORGAN STREET: Existing width, 60 feet; proposed width, 84 feet, California Avenue to Forty-sixth Avenue Southwest.

FORTY-SIXTH AVENUE SOUTHWEST AND PRODUCED: Existing width, 60 feet; proposed width, 84 feet from West Morgan Street to 120 feet south of West Willow Street.

SOUTHWESTERLY DIAGONAL: Proposed width, 84 feet to Frontenac Street and Fauntleroy Avenue.

FAUNTLEROY AVENUE: Existing width 60 feet; proposed width, 84 feet, Frontenac Street to West Henderson Street; thence southwesterly to Puget Sound. The proposed grades do not exceed 5%.

HIGHWAY NO. 42

NORTHWESTERLY DIAGONAL: Proposed width, 110 feet. Beginning at the west margin of the intersection of West Spokane Street and Alki Avenue, and extending thence along a curve to the right, radius 460 feet, through 62° 50′; thence along a tangent to said curve about 1,800 feet to the point of a curve to the right, radius 205 feet, through 52°, a point of a reverse curve; thence along a curve to the left, radius 275 feet, through 73° 30′, to a point of a reverse curve; thence along a curve to the right, radius 325 feet, through 55° 30′; thence along a tangent to said curve 95 feet; thence along a curve to the left, radius 705 feet, through 62°; thence northwesterly along a tangent to said curve about 210 feet to the intersection of Thirty-seventh Avenue Southwest and West Wait Street.

WEST WAIT STREET: Existing width, variable; proposed width, 84 feet from Belvidere Avenue to California Avenue.

GRADES

NORTHWESTERLY DIAGONAL AND CURVES: Proposed grade 7% from the intersection of West Spokane Street and Alki Avenue to proposed 7 foot cut at the intersection of Thirty-seventh Avenue Southwest and West Wait Street, occasional flat stretches or "rests" being introduced. A route has been laid out for a rapid transit line to the northeast of this highway, on a 4% grade. (See Rapid Transit Route No. 20.)

GRADES

WEST WAIT STREET: Proposed grade 3%, Thirty-seventh Avenue Southwest to Belvidere Avenue. Maximum existing grade 4.6% to California Avenue, a proposed bridge crossing the Fairmount Ravine.

HIGHWAY NO. 44

WEST HANFORD STREET: Existing width, 60 feet; proposed width, 84 feet from Sixty-third Avenue Southwest to Fifty-ninth Avenue Southwest.

DIAGONAL NORTHEASTERLY AND CURVES: Proposed width, 84 feet. Beginning at Fifty-ninth Avenue Southwest and West Hanford Street; thence northeasterly 195 feet

to the point of a curve to the right, radius 755 feet, through 42°; thence easterly along a tangent to said curve 155 feet; thence along a curve to the left, radius 555 feet, through 37° 40′; thence northeasterly along a tangent to said curve 905 feet; thence along a curve to the right, radius 1,025 feet, through 40° 30′ tangent to the center line of West Lander Street, at a point 200 feet west of the center line of Fifty-first Avenue Southwest.

WEST LANDER STREET: Proposed width, 84 feet, from a point 200 feet west of Fifty-first Avenue Southwest to Forty-ninth Avenue Southwest.

FERRY AVENUE AND FERRY AVENUE PRODUCED: Proposed width, 84 feet, West Lander Street to West Wait Street.

WEST WAIT STREET: Existing width, 84 feet from Forty-seventh Avenue Southwest to California Avenue.

GRADES: Proposed grades do not exceed 7%.

HIGHWAY NO. 45

SOUTHEASTERLY DIAGONAL: Proposed width, 100 feet from Twenty-fourth Avenue Southwest and Cloverdale Street to Twenty-second Avenue Southwest and West Henderson Street; existing width, 60 feet; proposed width, 80 feet to West Roxbury Street and Sixteenth Avenue Southwest.

SIXTEENTH AVENUE SOUTHWEST: Existing width, 100 feet; proposed width, 80 feet from West Roxbury Street to an angle point about 1,320 feet south thereof.

SOUTHEASTERLY DIAGONAL: Proposed width, 100 feet from the above angle point southeasterly, passing along the draw and the west side of Hicklin Lake, crossing the south line of Sec. 6, T. 23 N., R. 4 E., about 1,975 feet east of the southwest corner of said section; thence southwesterly to a connection with the County's so-called Jacob Ambaum Road.

JACOB AMBAUM ROAD: Existing width, 60 feet; proposed width, 100 feet from about the east and west center line of Sec. 7, T. 23 N., R. 4 E., to the point of a proposed curve (about 1,400 feet south of the east and west center line of Sec. 19, T. 23 N., R 4 E.,) to the left, radius 550 feet, through 144° to a point of a reverse curve; thence along a curve to the right, radius 330 feet through 168° 30′ to a point of a reverse curve; thence along a curve to the left, radius 960 feet, through 33°; thence along a tangent to said curve to the southeast corner of said Section 19.

GRADES: The proposed grades along this highway are all 3% or less.

HIGHWAY NO. 46

Proposed width, 84 feet. Beginning at the point of curve on the north and south center line of the NE¼ of Sec. 20, T. 23 N., R. 4 E., about 615 feet south of the north line of said section and extending thence along a curve to the left, radius 2,292 feet, through 32° 30′; thence northwesterly along a tangent to said curve 440 feet; thence along a curve to the left, radius 1,146 feet, through 41°; thence along a tangent to said curve 80 feet; thence along a curve to the right, radius 1,146 feet, through 49°; thence northwesterly along a tangent to said curve, crossing the north line of Sec. 17, T. 23 N., R. 4 E., about 475 feet east of the northeast corner of said section; thence continuing northwesterly 3,350 feet to the point of a curve to the left, radius 2,175 feet, through 49° 30′; thence along a tangent to said curve 175 feet to the point of a curve to the right, radius 1,150 feet, through 73° tangent to Highway No. 45, at a point about 120 feet north of the south line of Sec. 6, T. 23 N., R. 4 E.

GRADES: The proposed grades along the courses of this highway are all 3% or less.

HIGHWAY NO. 47

SIXTEENTH AVENUE SOUTH: Existing width, 60 feet; proposed width, 66 feet from Swift Avenue to Bennett Street.

BENNETT STREET: Existing width, 50 feet; proposed width, 66 feet from Sixteenth Avenue to Eighteenth Avenue South.

SOUTHEASTERLY DIAGONAL: Proposed width, 66 feet, extending from the intersection of Bennett Street and Eighteenth Avenue South to about Juneau Street and Twentieth Avenue South; thence east along Juneau Street produced west from Twenty-fourth Avenue South to the point of a curve to the left, (about 95 feet east of Twenty-fourth Avenue South), radius 195 feet, through 97° 30′; thence northeasterly along a tangent to said curve about 515 feet to the point of a curve to the right, radius 265 feet, through 148° 30′ to a point of a reverse curve; thence along a curve to the left, radius 480 feet, through 61° 30′; thence easterly along a tangent to said curve about 900 feet to the point of a curve to the left, radius 220 feet, through 84° 30′ to a point of reverse curve; thence along a curve to the right, radius 770 feet, through 30°; thence northeasterly about 400 feet to the point of a curve to the right, radius 95 feet, through 49° tangent to Brandon Street; thence east along Brandon Street about 385 feet to the point of a curve to the right, radius 100 feet, through 78°; thence along a tangent to said curve about 110 feet to the point of a curve to the left, radius 230 feet, through 74°; thence easterly about 185 feet to the point of a curve to the right, radius 220 feet, through 65°; thence southeasterly along a tangent about 215 feet to the point of a curve to the left, radius 130 feet, through 70° 00′, tangent to Orcas Street at about Renton Avenue.

ORCAS STREET: Existing width, 60 feet; proposed width, 66 feet from Renton Avenue to a point 330 feet east of Forty-sixth Avenue South. Here a jog is introduced, the continuation of this highway being along Lucile Street.

LUCILE STREET: Existing width, 50 feet; proposed width, 66 feet from a point about 365 feet west of Forty-eighth Avenue South to Fifty-second Avenue South.

SOUTHEASTERLY DIAGONAL: Proposed width, 66 feet from the intersection of Lucile Street and Fifty-second Avenue South to Orcas Street and Fifty-fourth Avenue South; thence angling and extending southeasterly about 260 feet to the point of a curve to the left, radius 440 feet through 81°; thence northeasterly along a tangent about 115 feet to the point of a curve to the right, radius 440 feet through 56° 30′ to a point of a reverse curve; thence along a curve to the left, radius 620 feet through 37° 30′, crossing over the Lake Shore Highway. A future continuation of this avenue connects with Bailey Peninsula by bridge.

GRADES: The proposed grades along the courses of this highway are all under 5%.

HIGHWAY NO. 48

NINTH AVENUE SOUTH: Existing width, 80 feet; proposed width, 80 feet from Seattle Boulevard to the center line of Nevada Street; thence along a curve to the right, radius 600 feet through 29° to a point of a reverse curve; thence along a curve to the left, radius 600 feet through 21° 30′; thence along a tangent to said curve (the west margins of both existing and proposed streets coinciding) to the south line of Sec. 17, T. 24 N., R. 4 E., (crossing about 330 feet east of the quarter corner); thence produced 60 feet to the point of a curve to the left, radius 2,800 feet through 9° 30′; thence southeasterly along a tangent to said curve about 735 feet to the point of a curve to the left, radius 550 feet through 50° 40′ to a point of reverse curve; thence along a curve to the right, radius 735 feet through 53° to a point of reverse curve; thence along a curve to the left, radius 490 feet through 53° 30′; thence southeasterly along a tangent to said curve 200 feet to the point of a curve to the right, radius 1,025 feet through 18°; thence southeasterly along a tangent to said curve, and along the center line of Swift Avenue to the point of a curve to the left, (about 140 feet southeasterly from the west line of Sec. 21, T. 24 N., R. 4 E.,), radius 950 feet through 22°; thence along a tangent to said

curve about 500 feet to the point of a curve to the right, radius 1,505 feet through 19°, crossing the south line of Sec. 21, T. 24 N., R. 4 E., about 930 feet east of the southwest corner thereof; thence along a tangent to said curve about 1,405 feet to the point of a curve to the right, radius 1,875 feet through 10° 30′; thence along a tangent to said curve about 1,475 feet to the point of a curve to the left, radius 1,595 feet through 15°; thence along a tangent to said curve about 660 feet to the point of a curve to the right, radius 700 feet through 20°; thence along a tangent to said curve about 975 feet to the point of a curve to the left, radius 230 feet, through 64° tangent to Highway No. 23. At this point the roadways branch, the continuation of this highway being as follows:

Beginning at the last named point of curve and extending southeasterly along the center line of the avenue produced about 170 feet to an angle point, turning off an angle to the left of 34° 30′; thence southeasterly about 275 feet to the point of a curve to the right, radius 540 feet, through 24° 30′; thence along a tangent to said curve, crossing the south line of Sec. 28, T. 24 N., R. 4 E., about 520 feet west of the southeast corner thereof, and extended thence about 415 feet to the point of a curve to the right, radius 390 feet, through 44°; thence along a tangent to said curve about 280 feet to the point of a curve to the left, radius 780 feet, through 28° 45′; thence along a tangent to said curve, crossing the east line of Sec. 33, T. 24 N., R. 4 E., about 2,130 feet south of the northeast corner thereof; thence extended about 195 feet to the point of a curve to the right, radius 2,605 feet, through 11°; thence southerly about 1,410 feet to the point of a curve to the left, radius 1,375 feet through 17° 30′; thence southeasterly along a tangent to said curve crossing the south line of Sec. 34, T. 24 N., R. 4 E., about 730 feet east of the southwest corner thereof; thence produced about 200 feet to the point of a curve to the left, radius 320 feet, through 34° 20′; thence along a tangent to said curve about 695 feet to the point of a curve to the left, radius 1,370 feet, through 32° 30′ to a point of a compound curve; thence along a curve to the left, radius 550 feet through 100° 20′ tangent to the main highway leading through Dunlap Canyon.

Such portions of this Highway as are included in the plan for the development of the waterfront, as shown on Map No. 7, are to be of the widths there shown.

GRADES: The proposed grades along the courses of this Highway are all 3% or less.

HIGHWAY NO. 49

EAST MARGINAL WAY: Proposed width, 180 feet, except that portion north of First Avenue South which is proposed 120 feet wide, beginning as a branch from Central Avenue at a point about 210 feet northwesterly from the east line of Sec. 10, T. 23 N., R. 4 E., and extending northwesterly, crossing the north line of said section about 1,280 feet east from the northwest corner thereof; continuing northwesterly about 1,260 feet to the point of a curve to the right, radius 3,165 feet through 9° 20′; thence northwesterly along a tangent to said curve about 2,510 feet (crossing the west line of Sec. 4, T. 23 N., R. 4 E., about 1,520 feet north of the southeast corner of said section) to the point of a curve to the right, radius 3,475 feet through 17° 40′; thence northwesterly along a tangent to said curve about 4,110 feet (crossing the north line of said Sec. 4 about 1,870 feet west of the northeast corner thereof) to the point of a curve to the left, radius 3,215 feet through 33° 30′; thence northwesterly along a tangent to said curve about 7,780 feet (crossing the north line of Sec. 33, T. 24 N., R. 4 E., about 4,150 feet west of the northeast corner of said section) to the point of a curve to the right, radius 1,995 feet through 29° 15′; thence northwesterly along a tangent to said curve 6,000 feet to the point of a curve to the left, radius 2,905 feet through 22° 50′; thence northwesterly about 2,515 feet to West Spokane Street.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Maps Nos. 7 and 8, are to be of the widths there shown.

GRADES: The proposed grades along this highway are all less than 3%.

HIGHWAY NO. 50

WEST MARGINAL WAY: Proposed width, 150 feet. Beginning at a point on the south line of Sec. 26, T. 23 N., R. 4 E., about 1,440 feet west of the southeast corner of said section; thence northeasterly, crossing the north line of said section 26 about 275 feet west of the northeast corner thereof; continuing northeasterly about 425 feet to the point of a curve to the left, radius 2,285 feet through 33°; thence northwesterly along a tangent to said curve about 3,540 feet to the point of a curve to the left, radius 2,390 feet through 25°, crossing the north line of Sec. 23, T. 23 N., R. 4 E., about 1,500 feet west of the northeast corner thereof; thence northwesterly along a tangent to said curve about 2,425 feet to the point of a curve to the right, radius 9,660 feet through 4° 30′; thence northwesterly (crossing the west line of Sec. 14, T. 23 N., R. 4 E., about 1,420 feet north of the west quarter corner of said section) about 4,685 feet to the point of a curve to the left, radius 2,775 feet through 10° 30′; thence northwesterly along a tangent to said curve about 1,930 feet to the point of a curve to the right, radius 3,300 feet through 9° 30′; thence northwesterly along a tangent to said curve 3,880 feet (crossing the south line of Sec. 4, T. 23 N., R. 4 E., about 1,265 feet west of the southeast corner of said section) to the point of a curve to the right, radius 2,240 feet through 12° 40′; thence northwesterly along a tangent to the said curve about 2,165 feet to the point of a curve to the right, radius 2,860 feet through 8° 10′; thence northwesterly along a tangent to said curve about 3,925 feet to the point of a curve to the left, radius 1,485 feet through 26° 50′; thence northwesterly along a tangent to said curve about 8,850 feet to the point of a curve to the right, radius 1,395 feet through 34° 30′; thence northwesterly along a tangent to said curve about 6,275 feet to the point of a curve to the left, radius 3,860 feet through 7°; thence northwesterly about 4,070 feet to the center line of West Spokane Street.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Maps Nos. 7 and 8, are to be of the widths there shown.

GRADES: The proposed grades along this highway are all 3% or less.

HIGHWAY NO. 51

BEACON AVENUE: Existing width, 80 feet; proposed width, 126 feet from Stevens Street to Forrest Street.

SEVENTEENTH AVENUE SOUTH: Existing width, variable; proposed width, 66 feet, from Beacon Avenue to Lander Street; existing width 66 feet from Lander Street to Corwin Place.

GRADES

BEACON AVENUE: Existing, 0.4% Stevens to Lander Street.

SEVENTEENTH AVENUE SOUTH: Grade at Beacon Avenue; thence existing 0.7% to McClellan Street; proposed 2.2% to 4.1 foot cut at Lander Street; proposed 4% to 5.1 foot cut at Wait Street; proposed 4% to 5.1 foot cut at Bay View Street; proposed 4% to 3.5 foot fill at College Street; proposed 4% to 1.5 foot cut at Walker Street; proposed 4% to 7.6 foot cut at Hill Street; proposed 4% to grade at Plum Street; proposed 4.7% to 5.5 foot fill at Holgate Street; proposed 4.7% to 19.0 foot fill at Grand Street; proposed 4.7% to 15.0 foot fill at State Street; proposed 4.7% to 18.0 foot fill at Massachusetts Street; proposed 4.7% to 2.0 foot fill at Atlantic Street; proposed 4.7% to grade at Corwin Place.

GRADE

CORWIN PLACE: Proposed grade under 3% Atlantic Street to Dearborn Street.

HIGHWAY NO. 52

WEST ALASKA STREET: Existing width, 60 feet; proposed width, 66 feet from Alki Avenue to Jacobson Road.

JACOBSON ROAD: Existing width, 60 feet; proposed width, 66 feet from West Alaska Street to a point of a curve to the right (about 85 feet south of Villa Street), radius 507 feet, through 25°; thence southeasterly along a tangent to said curve about 495 feet to the point of a curve to the right, radius 328 feet through 27° 50′, tangent to Fifty-second Avenue Southwest, about 180 feet north of West Hudson Street; thence south on Fifty-second Avenue Southwest, existing width 60 feet; proposed width, 66 feet to West Hudson Street.

SOUTHEASTERLY DIAGONAL: Proposed width, 66 feet, connecting the intersections of Fifty-second Avenue Southwest and West Hudson Street and Fifty-first Avenue Southwest and West Dawson Street.

WEST DAWSON STREET: Existing width, 60 feet; proposed width, 66 feet, Fifty-first Avenue Southwest to Forty-eighth Avenue Southwest. The course from this point was not determined definitely, but extends southeasterly to Forty-seventh Avenue Southwest about midway between West Dawson Street and West Brandon Street; thence east to about Forty-sixth Avenue Southwest and northerly to the intersection of Forty-fifth Avenue Southwest and West Hudson Street.

NORTHEASTERLY DIAGONAL: Proposed width, 66 feet, from West Hudson Street and Forty-fifth Avenue Southwest to California Avenue and West Alaska Street.

WEST ALASKA STREET: Existing width, variable, California Avenue to Thirty-ninth Avenue Southwest.

GRADES: The proposed grades along this highway will not exceed 7%.

HIGHWAY NO. 53

TWENTY-FIRST AVENUE SOUTH: Existing width, 66 feet, Rainier Avenue to Day Street.

NORTHWESTERLY DIAGONAL: Proposed width, 66 feet, connecting the intersection of Day Street (as proposed below), and Twenty-first Avenue South with Bush Place and Rainier Avenue.

DAY STREET: Proposed width, 66 feet (center line coincides with Day Street east of Bradner Place), from Twenty-first Avenue South to Yakima Avenue; thence a proposed tunnel to Thirty-fifth Avenue South, a circular space 200 feet in diameter, with the center of the circle on the center line of Day Street, as proposed, to be introduced between Thirty-fifth Avenue South and Thirty-sixth Avenue South. A northerly approach from this space, proposed width 66 feet, connects with the intersection of Thirty-fifth Avenue South and Norman Street and a southerly approach 66 feet wide connects with the intersection of Lake Avenue and Massachusetts Street. Steps should lead directly down to the lake shore.

GRADES

TWENTY-FIRST AVENUE SOUTH: Proposed grade 4.3%, Rainier Avenue to Day Street. Remaining grades all 3% or less.

HIGHWAY NO. 54

FORTY-EIGHTH AVENUE SOUTHWEST: Existing width, 60 feet; proposed width 66 feet, from Alki Avenue to a point about 130 feet south of West Holly Street, thence along a curve to the right, radius 165 feet, through 131° 20′ to a point of reverse curve; thence along a curve to the left, radius 480 feet, through 46° 50′ to a point of a reverse curve; thence along a curve to the right, radius 140 feet through 133° 30′; thence along a tangent to said curve about 275 feet; thence along a curve to the left, radius 70 feet, through 194°, tangent to Fauntleroy Avenue extension.

GRADES: The proposed grades along this highway are all 5%. A retaining wall must be built along Fauntleroy Avenue, since no space remains for making slopes, the grades of the two streets being about 25 feet apart at the extreme point.

HIGHWAY NO. 55

Proposed width, 84 feet. A street having a 5% maximum grade can be built, beginning at Three Tree Point and extending northeasterly following the topography until the gulch coming down to the graded County Road is met, and following up this gulch to the bench land. Thence passing the west end of Lake Burien to about the west quarter corner of Sec. 19, T. 23 N., R. 4 E., and extending northeasterly to the west quarter corner of Sec. 9, T. 23 N., R. 4 E., and continuing to about the north and south center line of said section, connecting with the Military Road.

A branch with a proposed width of 84 feet extends north from the south quarter corner of Sec. 6, T. 23 N., R. 4 E., to a connection with the First Avenue South line.

HIGHWAY NO. 56

Proposed width, 84 feet. This highway follows what is known as the Military Road, from the north line of Sec. 27, T. 23 N., R 4 E., northward to the junction with the Sunnydale Road. Several deviations are suggested from the existing line to improve both grade and line. This route can be made practicable for a 3% grade.

EAST BRANCH: Proposed width, 66 feet. This branch extends from the junction mentioned above in a northerly direction to connection with the West Marginal Way, crossing the proposed Duwamish Waterway by bridge and continuing northeasterly to a connection with the highways entering Dunlap Canyon.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Map No. 7, are to be of the widths there shown.

NORTHERN BRANCH: Proposed width, 84 feet. Beginning at the junction of the Military Road and the Sunnydale Road in the NW¼ of Sec. 9, T. 23 N., R. 4 E., thence extending in a northwesterly direction, following the topography to about the intersection of Cambridge Street and Fourteenth Avenues South, produced.

FOURTEENTH AVENUE SOUTH (AND FOURTEENTH AVENUE SOUTH PRODUCED): Existing width, 60 feet; proposed width, 84 feet, from Cambridge Street, produced to about Rose Street, where a bridge crossing the proposed Duwamish Waterway is introduced; thence northwesterly practically following Fourteenth Avenue South to a connection with Central Avenue, an overhead crossing connecting with the hillside proposed street on Graham Street.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Map No. 7, are to be of the widths there shown.

GRADES: The proposed grades along this highway are generally less than 3%, but upon the southern extremity 5% maximum will be required.

HIGHWAY NO. 57

Proposed width, 66 feet. The purpose of this route is to furnish a connection in an approximately east and west direction, and begins as a branch from the First Avenue South Highway, in the NE¼ of Sec. 29, T. 23 N., R. 4 E., thence extending northeasterly, passing through the northwest corner of Sec. 28, T. 23 N., R. 4 E., thence along a curved line suggested by the topography through and across the southern portion of Sec. 21, T. 23 N., R. 4 E., thence in a northeasterly direction, connecting with the highway leading to Riverton in the northeast corner of Sec. 22, T. 23 N., R. 4 E.

GRADES: The proposed grades along this highway should not exceed 5%.

HIGHWAY NO. 58

Proposed width, 84 feet. Beginning at the south line of Sec. 26, T. 23 N., R. 4 E., about 2,200 feet east of the southwest corner of said section, and extending in a northwesterly direction to about the west quarter corner of Sec. 23, T. 23 N., R. 4 E.; thence north along the west line of said section to the northwest corner thereof. From this point the course is northwesterly along a curved line, conforming to the topography crossing at about the north quarter corner of Sec. 15, T. 23 N., R. 4 E. Thence the highway extends north to Riverton and crosses the Marginal Ways and the proposed Duwamish Waterway by bridge, at right angles, extending northeasterly to an overhead approach to the Bluff Road leading south from Dunlap Canyon.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Maps Nos. 8 and 18, are to be of the widths there shown.

EASTERN BRANCH: Proposed width, 84 feet. Beginning at the junction of the proposed avenues at about the northwest corner of Sec. 23, T. 23 N., R. 4 E., and extending southeasterly along a curved line to about the north and south center line of Sec. 23, T. 23 N., R. 4 E.; thence east paralleling the south line of said section and about 1,320 feet north thereof, to the highway on the north and south center line of Sec. 19, T. 23 N., R. 5 E.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Map No. 8, are to be of the widths there shown.

GRADES: The proposed grades of this highway and its branch are generally less than 3% but should not exceed 5%.

HIGHWAY NO. 60

Proposed width, 84 feet. Beginning at about the south quarter corner of Sec. 14, T. 23 N., R. 4 E., and extending thence east along the south line of said section and to the south quarter corner of Sec. 18, T. 23 N., R. 5 E.; thence extending northeasterly and east along a platted street in Renton, situated about 450 feet north of the south line of said Sec. 18, and connecting with the main north and south highway in Sec. 17, T. 23 N., R. 5 E.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on the Maps Nos. 8 and 18, are to be of the widths there shown.

HIGHWAY NO. 61

Proposed width, 84 feet. Beginning at a point on Central Avenue as proposed in the SW¼ of Sec. 25, T. 23 N., R. 4 E., and extending thence in a northeasterly direction, crossing the northeast corner of said Sec. 25, and continuing northeasterly to the northeast corner of Sec. 19, T. 23 N., R. 5 E., and extending thence northeasterly to a connection with the north and south highway in Sec. 17, T. 23 N., R. 5 E.

GRADES: The proposed grades of this highway are all less than 3%.

HIGHWAY NO. 62

RENTON-BOTHELL ROUTES: Proposed width, 160 feet, combined highways and boulevard, except through the Town of Renton, and where affected by proposed waterfront development as indicated on maps showing the proposed improvements along the east shore of Lake Washington. Beginning at the south line of Sec. 20, T. 23 N., R. 5 E., and extending north parallel to and about 700 feet east of the west line of said section and extending north to about the east and west center line of Sec. 17, T. 23 N., R. 5 E.; thence in a northeasterly direction, crossing the proposed Cedar River Waterway; thence northerly along Garden Avenue as platted and produced in an approximately northerly direction through Secs. 8 and 5 of T. 23 N., R. 5 E., and extending northerly to about the east and west center line of Sec. 32, T. 24 N., R. 5 E.; thence easterly along a reverse curve,

tangent to a line crossing the north line of said section about 1,320 feet west of the northeast corner thereof; thence in a northeasterly direction along a slightly curved line suggested by the topography, to about the center of Sec. 16, T. 24 N., R. 5 E.; thence north to the north quarter corner of said Sec. 16; thence in a northwesterly direction to about the west quarter corner of Sec. 4, T. 24 N., R. 5 E.; thence in a northerly direction through the easterly portions of Sec. 5, T. 24 N., R. 5 E., and of Sec. 32, T. 25 N., R. 5 E., crossing the northeast corner of said Sec. 32 and passing through the west portion of Sec. 28, T. 25 N., R. 5 E., crossing at the northwest corner of said Sec. 28; thence in a northwesterly direction, crossing the north line of Sec. 20, T. 25 N., R. 5 E., at about the north quarter corner of said section; thence in a northwesterly idrection to about the east and west center line of Sec. 17, T. 25 N., R. 5 E.; thence along a curved line in a north and northeasterly direction, crossing the north line of said Sec. 17 at about the north quarter corner thereof; thence along a curved line in a northeasterly direction to the northeast corner of Sec. 8, T. 25 N., R. 5 E., extending northeasterly through Sec. 4, T. 25 N., R. 4 E., and crossing the north line of said section about 1,320 feet east of the northwest corner thereof; thence in a northerly direction crossing the north line of Sec. 23, T. 26 N., R. 5 E., about 1,320 feet east of the northwest corner of said section; thence northwesterly, crossing the west line of Sec. 28, T. 26 N., R. 5 E., at about the west quarter corner of said section; thence northwesterly, crossing the north line of Sec. 29, T. 26 N., R. 5 E., at about the north quarter corner of said section; thence in a northwesterly direction through Sec. 20, T. 26 N., R. 5 E., crossing the north line of said section, about 660 feet east of the northwest corner thereof; thence northwesterly across the southwest corner of Sec. 17, T. 26 N., R. 5 E.; thence in a northwesterly and northerly direction along a curved line through Sec. 18, T. 26 N., R. 5 E., crossing the north line of said Sec. 18, about 660 feet west of the northeast corner thereof; thence northeasterly to the east line of Sec. 7, T. 26 N., R. 5 E., touching at about the east quarter corner of said section; thence along a curved line in a northwesterly direction to the Town of Bothell.

Such portions of this highway as are included in the plan for the development of the waterfront as shown on Maps Nos. 15, 16, 17 and 18, are to be of the widths there shown.

GRADE: The proposed grades along the courses described for this highway are all 3% or less.

HIGHWAY NO. 63

Widths variable. This highway begins as a branch from the Renton-Bothell Route in Sec. 20, T. 26 N., R. 5 E., beginning at about the east and west center line of Sec. 20, T. 26 N., R. 5 E., and extending thence south, crossing the south line of said section to about 1,400 feet east of the southwest corner thereof; thence in a southwesterly direction, crossing the east line of Sec. 30, T. 26 N., R. 5 E., about 2,300 feet north of the southeast corner thereof, and continuing southwesterly about 620 feet to a line corresponding with Market Street in the Town of Kirkland, produced North, thence south about 3,600 feet; thence southwesterly and along the shore of the lake in front of Kirkland and Secs. 8 and 17, T. 25 N., R. 5 E.; thence southeasterly to a connection with the Renton-Bothell Road at about the southeast corner of Sec. 20, T. 25 N., R. 5 E.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Map No. 15, are to be of the widths there shown.

Two branches of this highway are proposed, each 84 feet wide, one extending east from Juanita Bay to the Renton-Bothell Road, the other begins at the ferry landing at Kirkland and extends east along Lake Avenue to Maple Avenue; thence north along Maple Avenue (crossing under the Northern Pacific Railway at about Jefferson Street), and paralleling the said railway right-of-way, connecting with the Renton-Bothell Highway in Sec. 33, T. 26 N., R. 5 E.

HIGHWAY NO. 64

HIGHWAY No. 64: This Highway connects Highways Nos. 62 and 65; branching off from Highway No. 65 at a point about 650 feet north of and 1,000 feet east of the ¼ corner, between Sections 5 and 8, T. 24 N., R. 5 E., running thence northerly through Section 5, T. 24 N., R. 5 E., and Section 32, T. 25 N., R. 5 E., to a point about 1,000 feet north of and 1,025 feet east of the center of Section 32, T. 25 N., R. 5 E.; said point being the point of curve to the right, radius 2,050 feet, through 49° 30″, thence by tangent northeasterly to intersection of Highway No. 62, at a point about 750 feet north of and 100 feet east of the corners to Sections 28, 29, 32 and 33, T. 25 N., R. 5 E.

EAST AND WEST BRANCH: This branch connects Highways Nos. 64 and 62 about 875 feet north of and parallel to the south line of Section 32, T. 25 N., R. 5 E.

WIDTHS: 120 feet from Highway No. 62 to a point 875 feet north of the south line of Section 32, T. 25 N., R. 5 E., 66 feet from this point to Highway No. 62.

East and West Branch, 84 feet wide.

HIGHWAY NO. 65

Proposed widths variable. This highway begins at the shore of Lake Washington at about the east and west center line of Sec. 8, T. 24 N., R. 5 E., and extends easterly along the shore of the lake to Mercer Slough; thence north along Hugh Street (and Hugh Street produced south), as platted in Qualheims' Lake Washington Acre Tracts; thence northwesterly, crossing the south line of Sec. 5, T. 24 N., R. 5 E., about 1,025 feet west of the southeast corner thereof; thence northwest along a curved line, crossing the north line of said Sec. 5, about 1,550 feet east of the northwest corner thereof; thence continuing northwesterly along the shore of Meydenbauer Bay, and crossing the south line of Sec. 30, T. 25 N., R. 5 E., about 1,500 feet east of the southwest corner of said section, continuing northwesterly into the SW¼ thereof, and curving to the left and extending southwesterly to the shore of the lake. The northerly extension of this highway lies about 700 feet east of and parallel to the west line of said Sec. 30, and Sec. 19, T. 25 N., R. 5 E., to a point about 1,400 feet north of the south line of said Sec. 19.

From this point the highway extends northeasterly to about the east and west center line of Sec. 19, T. 25 N., R. 5 E.; thence north along a line about 350 feet west of and parallel to the north and south center line of said Sec. 19, crossing the north line thereof about 2,200 feet east of the northwest corner thereof.

Thence the highway follows a curve to the right, conforming to the topography, and returns to the north line of Sec. 19, to point about 1,300 feet west of the northeast corner of said section; thence east to the said northeast corner, and thence northeasterly to a connection with Highway No. 63.

WESTERLY BRANCH: At a point where this highway crosses the south line of Sec. 25, T. 25 N., R. 4 E., the westerly branch runs west to the center line of said Sec. 25; thence north to the south quarter corner of Sec. 24; thence crossing to the right, with a curve of 1,320 feet radius, through an angle of 90°; thence due east to a junction with the main line in the SW¼ of Sec. 19; all widths to be as shown on Maps Nos. 16 and 17.

HIGHWAY NO. 66

(PROPOSED WIDTH 66 FEET)

BLANCHARD STREET: Existing width, 66 feet, from the marginal street of the proposed Civic Center to Denny Way.

BLANCHARD STREET PRODUCED: Proposed width, 66 feet, from Denny Way to Lakeview Boulevard.

The continuation of this proposed highway connects at a point on the center line of Lakeview Boulevard (said point being about 85 feet north of the angle point in said street and lying north of East Roy Street) with a point on Melrose Avenue North, about 90 feet south of the south line of East Roy Street.

MELROSE AVENUE NORTH: Existing width, 60 feet; proposed width, 66 feet from above angle point to East Mercer Street, and to an angle point about 40 feet south of the intersection of East Mercer Street.

SOUTHEASTERLY DIAGONAL: Proposed width, 66 feet, extending southeasterly from above angle point about 710 feet to the point of a curve to the left, radius 190 feet, through 159° 30′ tangent to Summit Avenue North about 155 feet north of the north line of East Republican Street.

EAST REPUBLICAN STREET: Existing width, 60 feet; proposed width, 66 feet, from East Harrison Street to north line of East Republican Street; thence along a curve to the right, radius 300 feet, through 36°; thence northeasterly along a tangent to said curve about 380 feet to the point of a curve to the right, radius 470 feet, through 54° 30′, tangent to East Roy Street at a point 10 feet west of the west line of Harvard Avenue North.

EAST ROY STREET: Existing width, variable; proposed width, 66 feet, from Harvard Avenue North to Federal Avenue.

GRADES: The proposed grades along this highway conform with grades of the intersected streets as nearly as possible, and are not to exceed 7%. That portion of Blanchard Street produced, lying between Republican Street and Lakeview Boulevard is proposed as a viaduct passing over both Howard Avenue North and Eastlake Avenue.

HIGHWAY NO. 67

BROAD STREET: Existing width, 80 feet, from John Street to Mercer Street.

BROAD STREET PRODUCED: Proposed width, 80 feet, from John Street to Denny Way, and from Mercer Street to Westlake Avenue.

DENNY WAY: Existing and proposed width, 66 feet, from Third Avenue to Fairview Avenue.

NORTHWESTERLY DIAGONAL: Proposed width, 66 feet. This street is laid out symetrical with Broad Street as referred to the east line of Fourth Avenue North and extends from a point on the center line of Denny Way about 85 feet east of the center line of Fifth Avenue North to an angle point 160 feet east and 30 feet south of the intersection of First Avenue North and Mercer Street, said angle being about 4° 45′; thence northwesterly about 1,200 feet to the point of a curve to the left, radius 275 feet through 37° 45′ tangent to Olympic Place 20 feet east of the intersection of Second Avenue West.

OLYMPIC PLACE: Existing width, 66 feet from Second Avenue North to Epler Place (south margin); thence along a curve to the right, radius 565 feet through 46° 45′; thence northwesterly along a tangent to said curve about 685 feet to the point of a curve to the right, radius 795 feet, through 13° 30′, tangent to a line parallel to and 33 feet west of the present center line of Eighth Avenue West on the south margin of West Lee Street.

EIGHTH AVENUE WEST: Proposed double radius between West Lee Street and West Blaine Street the necessary 66 foot street being obtained by widening, taking 29 feet off of the west side.

NORTHEASTERLY DIAGONAL: Proposed width, 66 feet, connecting the intersection of Eighth Avenue West and West Blaine Street with Seventh Avenue West and West Howe Street.

WEST HOWE STREET: Existing width variable; proposed width, 66 feet, from Seventh Avenue West to Fifth Avenue West.

GRADES: The proposed grades of this highway are intended to conform to the existing grades intersected as nearly as possible and do not exceed 5% on the portion east of Third Avenue West or north of West Lee Street. On the remainder a 6% maximum grade may be obtainable without materially changing the existing conditions, except on Denny Way between Terry Avenue and Fairview Avenue, where a regrade is probable

and necessary to obtain a maximum 5% grade. On Olympic Place between Third Avenue West and Epler Place, a regrade would be necessary, making a maximum fill of about 4 feet at Fifth Avenue West.

HIGHWAY NO. 68

PINE STREET AND EAST PINE STREET: Existing width, 80 feet, Fourth Avenue to Summit Avenue.

FOURTH AVENUE: Existing width, 90 feet, Pike Street to the Civic Center marginal street.

CIVIC CENTER MARGINAL STREET: Proposed width, 80 feet.

THIRD AVENUE: Existing width, 90 feet, Bell Street to Denny Way.

NINTH AVENUE NORTH: Existing width, 66 feet; proposed width, 84 feet, Valley Street to Denny Way.

NINTH AVENUE NORTH PRODUCED: Proposed width, 84 feet, connecting the intersection of Ninth Avenue North and Denny Way with the intersection of Fourth Avenue and Olive Street.

APPENDIX NO. II

Park and Playground Descriptions

PROPOSED PARK AREAS

Tentative selections have been made for parks located as follows:

(1) Fractional S½ of Sec. 35, T. 27 N., R. 3 E. W. M., containing about 235 acres.

(2) S½ of the NW¼, and the SW¼ of the SW¼; the E½ of the NE¼ of the SW¼; the SE¼ of the SW¼, and the W½ of the W½ of the SE¼ of Sec. 32, T. 27 N., R. 4 E. W. M., containing about 150 acres.

(3) The W½ and the W. 500 feet of the E½ of Sec. 2, and the E. 600 feet of Sec. 3, and the E. 650 feet of the W. 1,880 feet of fractional Sec. 11, T. 26 N., R. 4 E. W. M., containing about 475 acres.

(4) The NW¼ of the NE¼ of Sec. 12, T. 26 N., R. 3 E. W. M., containing about 40 acres.

(5) A strip of land about 500 feet wide by 2,400 feet long, lying in the SE¼ of Sec. 12, T. 26 N., R. 3 E., and the SW¼ of the SW¼ of Sec. 7, T. 26 N., R. 4 E. W. M., containing about 28 acres.

(6) The S. 2,000 feet of the SW¼, and the W. 660 feet of the S. 2,000 feet of the SE¼ of Sec. 8, T. 26 N., R. 4 E. W. M., containing about 150 acres.

(7) The SE¼ of the NE¼, and the NE¼ of the SE¼ of Sec. 16, also a strip 300 feet on either side of the east and west center line through Sec. 15; all in T. 26 N., R. 4 E., containing about 100 acres. (Strip to follow small creek.)

(8) The SE¼ and the S½ of the S½ of the NE¼ of Sec. 13, T. 26 N., R. 4 E. W M., containing 200 acres.

(9) The NE¼ of the NW¼, and W½ of the NW¼ of the NE¼ of Sec. 20, T. 26 N., R. 4 E., containing about 60 acres.

(10) That portion of Sec. 19 lying between Greenwood Avenue, the Seattle-Everett Interurban right-of-way, south of the county road, which is about 1,600 feet south of the north line of the said section, and all north of a line 1,650 feet north of the south line of said section, all in T. 26 N., R. 4 E. W. M., containing about 65 acres.

(11) The S½ of the NE¼ of the SW¼; the N½ of the SE¼ of the SW¼; the SE¼ of the NW¼ of the SW¼; the NE¼ of the SW¼ of the SW¼ of Sec. 21, T. 26 N., R. 4 E. W. M., containing 60 acres.

(12) The W½ of the NW¼ of Sec. 36; the NE¼ of Sec. 35, the fractional NW¼ of Sec. 35, and all of fractional Sec. 34, all in T. 26 N., R. 3 E., containing about 400 acres.

(13) Blocks 38, 43, 54, 55, 58, 59, 70, 71, 74, 75, 86 and 87, of The Maple Leaf Addition to the City of Seattle; also Blocks 1, 2, 3, 4, 5 and 6 of Thumm & Moore's Subdivision of Blocks 39 and 42 of The Maple Leaf Addition to the City of Seattle; also Blocks 3 and 4 of Heustis' Addition to the City of Seattle, all in Sec. 33, T. 26 N., R 4 E. W. M., containing about 65 acres.

(14) An area of about 17 acres in Sections 1 and 2, T. 25 N., R. 4 E. W. M., as shown on Map No. 14 (Pontiac Waterfront District).

(15) The SE¼ of Sec. 9, T. 25 N., R. 5 E. W. M., containing about 160 acres.

(16) The N. 800 feet of the E. 700 feet of the SE¼; also Blocks 21 to 28 and 37 to 40, State Park Addition, all in Sec. 4, T. 25 N., R. 4 E. W. M., containing about 22 acres.

(17) An area 850 feet east and west by 1,250 feet north and south, lying north of East Eighty-second Street, and east of Tenth Avenue Northeast, excepting the area occupied by Green Lake Intermediate Service Reservoir, comprising about 13 acres.

(18) An area about 1,150 feet east and west by 1,200 feet north and south, lying between East Seventieth and East Seventy-fifth Streets, and Twelfth and Sixteenth Avenues Northeast, excepting the area occupied by the Green Lake Low Service Reservoir, comprising about 18 acres.

(19) The W¾ of the N½ of the NE¼ of Sec. 19, T. 25 N., R. 5 E.; also the south 660 feet of the east 1,980 feet of the SE¼ of Sec. 18, T. 25 N., R. 5 E., containing about 75 acres.

(20) Blocks 16, 17, 20, 21, 26 and 27 (Plat of Moorland), in Sec. 31, T. 26 N., R. 5 E., and Sec. 6, T. 24 N., R. 5 E., containing about 20 acres.

(21) The S. 1,200 feet of the SW¼ of Sec. 7, the N. 1,850 feet of the NW¼ of Sec. 18, T. 24 N., R. 5 E. W. M., containing about 185 acres.

(22) The W. 1,900 feet of the N. 2,300 feet of the SE¼ of Sec. 12, T. 23 N., R. 4 E. W. M., containing about 100 acres.

(23) That portion of Secs. 23 and 24 lying between Central Avenue and Highways Nos. 50 and 58, and south of a line 750 feet north of the north line of Highway No. 58, all in T. 23 N., R. 4 E. W. M., containing about 27 acres.

(24) All that portion of the E. 850 feet of the SE¼ of Sec. 24, T. 23 N., R. 3 E., which lies south of Burien Lake, and north of a line 900 feet north of the south line of said section; also all that portion of the W. 350 feet of the SW¼ of Sec. 19, lying south of Burien Lake and north of a line 900 feet north of the south line of Sec. 19, all in T. 23 N., R. 4 E. W. M., and containing about 16 acres.

(25) SW¼ of the SW¼ of the NE¼ and the SE¼ of the SE¼ of the NW¼, and the W. 1,250 feet of the SW¼, and the N. 950 feet of the E. 1,390 feet of the SW¼; also the north 950 feet of the W. 660 feet of the SE¼ of Sec. 25, all in T. 23 N., R. 3 E. W. M., containing about 100 acres.

(26) The SE¼ of the SE¼ of the NE¼ of Sec. 13, T. 26 N., R. 3 E., containing 10 acres.

(27) The NW¼ of the NW¼ of the NW¼ of Sec. 34, T. 26 N., R. 4 E., containing 10 acres.

(28) Blocks 135, 136, 145, 146 of Central Addition to the Town of Kirkland, containing about 7 acres.

(29) All that portion of the SE¼ of the SE¼ of the SE¼, Sec. 25, T. 25 N., R. 5 E. W. M., lying east of Highway No. 65, containing about 8 acres.

(30) Tracts 50 to 53 and 79 to 82, both inclusive, of Bellevue Acre and Half-Acre Tracts, in Sec. 32, T. 25 N., R. 5 E., containing about 7 acres.

(31) The SE¼ of the NE¼ of the SW¼, and the NE¼ of the SE¼ of the SW¼, and the NW¼ of the SW¼ of the SE¼ of Sec. 16, T. 24 N., R. 5 E., containing 30 acres.

(32) The SW¼ of the SW¼ of the SW¼ of Sec. 24, T. 24 N., R. 3 E. W. M., containing 10 acres.

(33) Tract 8, Century Scenic Acre Tracts, and that portion of Sec. 36, T. 24 N., R. 3 E., lying due east of the above tracts, and west of Highway No. 40, containing about 9½ acres.

(34) The west 450 feet of the SW¼ of the SE¼ and that portion of the E½ of the SE¼ of the SW¼ of Sec. 6, T. 23 N., R. 4 E., which lies east of Highway No. 45;

also all that portion of the W. 450 feet of the NW½ of the NE¼ and the NE¼ of the NW¼ of Sec. 7, which lies north and east of Highway No. 45-46, all in T. 23 N., R. 4 E. W. M., containing about 37 acres.

(35) The NW¼ of the SW¼ of the NW¼ of Sec. 16, T. 23 N., R. 4 E. W. M., containing 10 acres.

(36) The E. 200 feet of the NE¼ of the NE¼ of the NE¼ of Sec. 21; and the NW¼ of the NW¼ of the NW¼ of Sec. 22, all in T. 23 N., R. 4 E. W. M., containing about 13 acres.

(37) That portion of the E. 350 feet of the SE¼ of Sec. 15, and the W. 350 feet of the SW¼ of Sec. 14, T. 23 N., R. 4 E., which lies north of a line 1,600 feet north of the south line of said section, and south of the County Road running southwest from Foster Station, containing about 9.6 acres.

(38) A portion of Sec. 18, T. 23 N., R. 5 E., being a strip 600 feet wide north and south, by 1,000 feet long east and west, the southwest corner of which is 660 feet east of the center of Sec. 18, containing about 14 acres.

(39) That portion of Sec. 17, T. 23 N., R. 5 E., lying north of Cedar River, west of the Columbia & Puget Sound Railway, east of the County Road, and south of the new highway located about 500 feet north of the river, containing about 6 acres.

(40) The E½ of the SE¼ of the SW¼ of Sec. 20, T. 23 N., R. 4 E. W. M., containing about 10 acres.

(41) Blocks 43, 52 and 53 of the Town of Kirkland and two other tracts lying westerly of the above named blocks, more particularly shown on Map No. 16, (Juanita Bellevue Waterfront), containing about 11 acres.

APPENDIX NO. III

Proposed Rapid Transit System

DETAILED DESCRIPTION

CIVIC CENTER STATION

This is indicated only by a general location on the map. The precise form and arrangement of this central feature of rapid transit would of necessity be a matter of the most careful and thorough detailed study. It must involve the matter of the routing of through lines and also of those which make this point a terminal. Many tracks will be required and especial care taken to avoid any grade crossings. This whole central feature is intended to be in subway, arranged to suit the locations of public buildings, etc.

For convenience the descriptions of the various rapid transit lines following, will be given outward from this Civic Center Station, although several of these lines would naturally be through routes from south to north, passing around or possibly through the Civic Center.

ROUTE NO. 1

This is the proposed main central trunk line between the Civic Center and the railway stations, on Jackson Street, in subway under Third Avenue, with transition to elevate railway, in the steep block of Third Avenue South, between Yesler Way and Washington Street, and continuing by elevated railway to Jackson Street, there connecting with the elevated line proposed for Jackson Street. Inasmuch as most of the southern incoming lines would be routed through this subway to the Civic Center, and the northern lines to the King Street Station likewise, as well as through lines between northern and southern districts, this trunk may eventually be planned for four tracks.

Location of stations must be a matter of detailed study and decision at the time of construction. Stations on this subway would be of easy access from Second Avenue by entrances and exits arranged to take advantage of the grades at the cross streets, walk ways being possible on practically level grade from openings in the sidewalk just above the alley between Second and Third Avenues. Additional entrances to stations should be arranged from Third Avenue, and also from within large mercantile establishments in the station vicinity, which in other cities invite such subway conveniences for the purpose of attracting business. Fourth Avenue, while not so convenient of access, would still be well served by a line in Third Avenue. The maximum of possible service through the central business area, with its three thoroughfares of great future importance, is available by this proposed trunk subway under Third Avenue.

ROUTE NO. 2

This line is in subway on Second Avenue, northwesterly from the Civic Center, continuing on Second Avenue to Denny Way where it joins proposed Highway No. 3; on said Highway No. 3 to Elliott Avenue, where a change is made from subway to elevated; on Elliott Avenue to Fifteenth Avenue West; on Fifteenth Avenue West to the bridge over Salmon Bay and thence changing to subway before reaching West Forty-eighth Street; on West Forty-eighth Street, Leary Avenue and Twentieth Avenue Northwest, continuing as subway through Ballard coming to the surface at about West Sixty-sev-

enth Street, and continuing as a surface line to the northwest on the proposed Leary Avenue extension to the proposed park north of Ballard. This route would serve Smith's Cove waterfront, Interbay, Ballard, Ballard Park, etc.

ROUTE NO. 3

This route consists of a loop, leaving Fifteenth Avenue West, elevated, at Lawton Way; on Lawton Way to West Wheeler Street; on West Wheeler Street to Thorndyke Avenue, where a change is to be made to subway after crossing Thorndyke Avenue; then continuing due west in tunnel, under the ridge, coming to the surface about Thirtieth Avenue West, changing to elevated railway across the low ground in Pleasant Valley and again to subway at about Thirty-sixth Avenue West; then turning north on Thirty-sixth Avenue West in subway continuing to Government Way; on Government Way to the intersection of Thirty-second Avenue West and Sunderland Street; on Sunderland Street to Thirtieth Avenue West, thence continuing east through private property one block to proposed Highway No. 1; on proposed Highway No. 1, elevated, to the intersection of Twenty-third Avenue West and Gilman Avenue; on Gilman Avenue to Twentieth Avenue West; thence on Twenty-third Avenue West to Lawton Way, joining the elevated line at that point completing the loop.

This route in connection with surface lines will serve the Magnolia Bluff district and the Military Reservation, and while topographic maps are not available covering the entire route, it is thought no difficulty will be experienced in obtaining grades not exceeding 5%.

ROUTE NO. 4

This route leads northerly, in subway, from the Civic Center loop, on the northwest radial street forming a part of the Civic Center plan, and also noted as Highway No. 67; continuing on this line to the intersection of Warren Avenue, just north of Republican Street, then north on Warren Avenue in subway, entering tunnel at the south margin of Valley Street; then continuing on the line of Warren Avenue, joining the center line of Prospect Street with a curve of four hundred feet radius; thence on Prospect Street and West Prospect Street to Second Avenue West. At this point a station should be constructed in subway. This line continues north on Second Avenue West, entering tunnel again and continuing to Galer Street, thence in the alley between First and Second Avenues West and emerging from tunnel at the north margin of Garfield Street, reaching the surface grade at Blaine Street; from this point connections can easily be made with existing surface lines.

This route will serve the Queen Anne Hill district.

An East Queen Anne loop can be had on the following streets: Blaine Street from the subway terminal to Warren Avenue; on Warren Avenue to Galer Street; on Galer Street to Fourth Avenue North; on Fourth Avenue North to Boston Street; on Boston Street to Second Avenue West; on Second Avenue West to Blaine Street and subway terminal.

A West Queen Anne loop can be had on the following streets: Second Avenue West from Blaine Street subway terminal to West Galer Street; on West Galer Street to Sixth Avenue West; on Sixth Avenue West to McGraw Street; on West McGraw Street to Second Avenue West; on Second Avenue West to Blaine Street and subway terminal. These surface loop lines in connection with the subway would afford rapid transit to the business section of the city for the main Queen Anne Hill area.

ROUTE NO. 5

This follows Central Avenue proposed, directly north from the Civic Center, in subway, passing the proposed Central Station, running north along the west side of Lake Union, becoming elevated at about Halladay Street, crossing the west arm of the lake

and continuing elevated over the whole length of the bridge and northward therefrom to some point where transition to subway will be convenient; thence along Central Avenue to and along the west side of Green Lake and further north on Central Avenue by subway or elevated as development may demand. The loop or alternative route around the east side of Green Lake will probably require subway, one block away from the waterfront, following the route of Highway No. 10, thus taking street cars off the parkway and bringing the service everywhere one block nearer the people than at present. This branch becomes a surface line north of Ravenna Boulevard. Grades may be had not to exceed about 3%.

ROUTE NO. 7

Beginning at the intersection of Fifteenth Avenue Northwest and West Forty-eighth Street; thence in subway running east on West Forty-eighth Street to Third Avenue Northwest; from this point the line passes directly to the intersection of Midvale Avenue and East Forty-fifth Street, by tunnel, reaching subway at Midvale Avenue; continuing in subway on East Forty-fifth Street to Fifteenth Avenue Northeast; thence passing into tunnel, continuing to Twenty-second Avenue Northeast, emerging to the surface about one hundred fifty feet west of Twenty-second Avenue Northeast, crossing overhead of Twenty-second Avenue Northeast and the Northern Pacific Railway track and coming to the surface at about Twenty-ninth Avenue Northeast; thence continuing on the surface along proposed Highway No. 36 to about East Sixty-fifth Street and extending farther east as development may demand.

A station should be provided at the intersection of Fifteenth Avenue Northeast and East Forty-fifth Street in order to give the best possible service to the University.

ROUTE NO. 8

This route leads directly from the Civic Center loop, in subway on Blanchard Street, to Fairview Avenue; on Fairview Avenue to Mercer Street; thence on a new diagonal street—Highway No. 12—to the angle in Eastlake Avenue just north of Almy Street; on Eastlake Avenue to about midway between Fillmore and Martin Streets, where the line would come to the surface and become elevated over the canal waterway, railways, and East Fortieth Street, entering subway again between East Fortieth and East Forty-first Streets and continuing northerly on proposed Highway No. 12 to the intersection of East Forty-fifth Street and Rapid Transit Route No. 7; thence on Tenth Avenue Northeast, in subway, to about East Eighty-fifth Street, and continuing north as may be required.

This line will serve the intermediate district lying between Green Lake and the University and all that region immediately north of that section and, by transfer, will accommodate the University and the region to the northeast. The grades should not exceed 5% and the greater portion of the line need not exceed 3%.

ROUTE NO. 9

From the intersection of Third Avenue and Pine Street this route will be in subway on Pine Street to the intersection of Highway No. 19, about Summit Avenue; on Highway No. 19, to Pike Street, between Belmont Avenue and Boylston Avenue; on Pike Street, East Pike Street and East Pike Street produced, to the west shore of Lake Washington.

This route will pass well under the surface from Fifteenth Avenue to Twenty-seventh Avenue, coming near the surface at Twenty-seventh Avenue, to permit a connection with a proposed route north; then entering tunnel again on a direct grade to the lake shore.

This line will serve to gather the traffic from the Broadway-Capitol Hill Rapid Transit loop, the Twenty-seventh Avenue line and such traffic as may be gathered from ferry service on Lake Washington. The grades necessary will not exceed 5%.

ROUTE NO. 10

This route consists of a loop, all in subway, beginning at the intersection of East Pike Street and Broadway, with a station connection with route number nine; thence north on Broadway to East Roy Street; thence on Tenth Avenue North to East Boston Street; on East Boston Street to Fifteenth Avenue North; thence diagonally southeast, emerging from subway to elevated railway, then back to subway again, reaching the intersection of Nineteenth Avenue North and East Galer Street; on Nineteenth Avenue and Nineteenth Avenue North, in subway to East Alder Street; thence west on East Alder Street, emerging from subway and passing elevated over Twelfth, Thirteenth and Fourteenth Avenues; thence in subway to Broadway; on Broadway to East Pike Street, completing the loop.

This line will serve to gather the traffic from the Broadway and Capitol Hill districts, transferring the same to the East Pike Street line (Route No. 9). The grades will not exceed 5%.

ROUTE NO. 11

From the intersection of Jackson Street and Railroad Avenue, an elevated line is proposed on Jackson Street to Sixth Avenue South, diagonally southeast on proposed Highway No. 22 to Dearborn Street; on Dearborn Street to Rainier Avenue; on Rainier Avenue to Day Street produced west of Twentieth Avenue South; thence on Day Street to Twenty-first Avenue South, entering subway about the west margin of Twentieth Avenue South; thence continuing in subway and tunnel under private property from the intersection of Day Street and Twenty-first Avenue South to the intersection of Day Street and Twenty-fourth Avenue South; thence in subway to the Day Street tunnel, under the floor of the tunnel to Thirty-sixth Avenue South, landing at such elevation as to give ready access to ferries on Lake Washington.

This route will receive the traffic from the Rainier Valley and Rainier Heights districts and ultimately much overlake traffic. The grades will not exceed 3%.

ROUTE NO. 12

This is a continuation of the Dearborn Street route connecting with Route No. 11 at the intersection of Rainier Avenue, entering tunnel at the west margin of Davis Place, reaching subway depth at Twenty-sixth Avenue South; thence in subway on Twenty-sixth Avenue South to Main Street; thence diagonally to the intersection of Twenty-seventh Avenue South and Main Street; on Twenty-seventh Avenue South and Twenty-seventh Avenue, to about East Pine Street; thence transition to elevated at East Olive Street, continuing elevated to about East Madison Street, returning to subway at East Mercer Street and Twenty-eighth Avenue North; on Twenty-eighth Avenue North to East Lynn Street; thence in a subway on a diagonal street following the line of proposed Highway No. 13, to the intersection of Montlake Boulevard and the government canal reserve; thence northerly along said Highway No. 13, on the surface, to a junction with Highway No. 33; continuing north on Highway No. 33 to Eighty-fifth Street and further north as may be found necessary. This line serves through north and south traffic that does not pass through the business center and also, by means of transfer to the Dearborn Street and East Pike Street lines, gives access to the business center. The grades may all be kept within 3%.

ROUTE NO. 13

This is merely a connecting link between Route No. 8 and No. 12, beginning at the intersection of Eastlake Avenue and Roanoke Street; east on Roanoke Street—in tunnel —to about the east margin of Eleventh Avenue North; then becoming elevated, continues to Boyer Avenue; on Boyer Avenue to Louisa Street, entering subway on the west margin of the northeast diagonal street, running to an intersection with Montlake Avenue, coming to the surface at that point, joining with Route No. 12.

HIGHWAY NO. 58

Proposed width, 84 feet. Beginning at the south line of Sec. 26, T. 23 N., R. 4 E., about 2,200 feet east of the southwest corner of said section, and extending in a northwesterly direction to about the west quarter corner of Sec. 23, T. 23 N., R. 4 E.; thence north along the west line of said section to the northwest corner thereof. From this point the course is northwesterly along a curved line, conforming to the topography crossing at about the north quarter corner of Sec. 15, T. 23 N., R. 4 E. Thence the highway extends north to Riverton and crosses the Marginal Ways and the proposed Duwamish Waterway by bridge, at right angles, extending northeasterly to an overhead approach to the Bluff Road leading south from Dunlap Canyon.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Maps Nos. 8 and 18, are to be of the widths there shown.

EASTERN BRANCH: Proposed width, 84 feet. Beginning at the junction of the proposed avenues at about the northwest corner of Sec. 23, T. 23 N., R. 4 E., and extending southeasterly along a curved line to about the north and south center line of Sec. 23, T. 23 N., R. 4 E.; thence east paralleling the south line of said section and about 1,320 feet north thereof, to the highway on the north and south center line of Sec. 19, T. 23 N., R. 5 E.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Map No. 8, are to be of the widths there shown.

GRADES: The proposed grades of this highway and its branch are generally less than 3% but should not exceed 5%.

HIGHWAY NO. 60

Proposed width, 84 feet. Beginning at about the south quarter corner of Sec. 14, T. 23 N., R. 4 E., and extending thence east along the south line of said section and to the south quarter corner of Sec. 18, T. 23 N., R. 5 E.; thence extending northeasterly and east along a platted street in Renton, situated about 450 feet north of the south line of said Sec. 18, and connecting with the main north and south highway in Sec. 17, T. 23 N., R. 5 E.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on the Maps Nos. 8 and 18, are to be of the widths there shown.

HIGHWAY NO. 61

Proposed width, 84 feet. Beginning at a point on Central Avenue as proposed in the SW¼ of Sec. 25, T. 23 N., R. 4 E., and extending thence in a northeasterly direction, crossing the northeast corner of said Sec. 25, and continuing northeasterly to the northeast corner of Sec. 19, T. 23 N., R. 5 E., and extending thence northeasterly to a connection with the north and south highway in Sec. 17, T. 23 N., R. 5 E.

GRADES: The proposed grades of this highway are all less than 3%.

HIGHWAY NO. 62

RENTON-BOTHELL ROUTES: Proposed width, 160 feet, combined highways and boulevard, except through the Town of Renton, and where affected by proposed waterfront development as indicated on maps showing the proposed improvements along the east shore of Lake Washington. Beginning at the south line of Sec. 20, T. 23 N., R. 5 E., and extending north parallel to and about 700 feet east of the west line of said section and extending north to about the east and west center line of Sec. 17, T. 23 N., R. 5 E.; thence in a northeasterly direction, crossing the proposed Cedar River Waterway; thence northerly along Garden Avenue as platted and produced in an approximately northerly direction through Secs. 8 and 5 of T. 23 N., R. 5 E., and extending northerly to about the east and west center line of Sec. 32, T. 24 N., R. 5 E.; thence easterly along a reverse curve,

tangent to a line crossing the north line of said section about 1,320 feet west of the northeast corner thereof; thence in a northeasterly direction along a slightly curved line suggested by the topography, to about the center of Sec. 16, T. 24 N., R. 5 E.; thence north to the north quarter corner of said Sec. 16; thence in a northwesterly direction to about the west quarter corner of Sec. 4, T. 24 N., R. 5 E.; thence in a northerly direction through the easterly portions of Sec. 5, T. 24 N., R. 5 E., and of Sec. 32, T. 25 N., R. 5 E., crossing the northeast corner of said Sec. 32 and passing through the west portion of Sec. 28, T. 25 N., R. 5 E., crossing at the northwest corner of said Sec. 28; thence in a northwesterly direction, crossing the north line of Sec. 20, T. 25 N., R. 5 E., at about the north quarter corner of said section; thence in a northwesterly idrection to about the east and west center line of Sec. 17, T. 25 N., R. 5 E.; thence along a curved line in a north and northeasterly direction, crossing the north line of said Sec. 17 at about the north quarter corner thereof; thence along a curved line in a northeasterly direction to the northeast corner of Sec. 8, T. 25 N., R. 5 E., extending northeasterly through Sec. 4, T. 25 N., R. 4 E., and crossing the north line of said section about 1,320 feet east of the northwest corner thereof; thence in a northerly direction crossing the north line of Sec. 23, T. 26 N., R. 5 E., about 1,320 feet east of the northwest corner of said section; thence northwesterly, crossing the west line of Sec. 28, T. 26 N., R. 5 E., at about the west quarter corner of said section; thence northwesterly, crossing the north line of Sec. 29, T. 26 N., R. 5 E., at about the north quarter corner of said section; thence in a northwesterly direction through Sec. 20, T. 26 N., R. 5 E., crossing the north line of said section, about 660 feet east of the northwest corner thereof; thence northwesterly across the southwest corner of Sec. 17, T. 26 N., R. 5 E.; thence in a northwesterly and northerly direction along a curved line through Sec. 18, T. 26 N., R. 5 E., crossing the north line of said Sec. 18, about 660 feet west of the northeast corner thereof; thence northeasterly to the east line of Sec. 7, T. 26 N., R. 5 E., touching at about the east quarter corner of said section; thence along a curved line in a northwesterly direction to the Town of Bothell.

Such portions of this highway as are included in the plan for the development of the waterfront as shown on Maps Nos. 15, 16, 17 and 18, are to be of the widths there shown.

GRADE: The proposed grades along the courses described for this highway are all 3% or less.

HIGHWAY NO. 63

Widths variable. This highway begins as a branch from the Renton-Bothell Route in Sec. 20, T. 26 N., R. 5 E., beginning at about the east and west center line of Sec. 20, T. 26 N., R. 5 E., and extending thence south, crossing the south line of said section to about 1,400 feet east of the southwest corner thereof; thence in a southwesterly direction, crossing the east line of Sec. 30, T. 26 N., R. 5 E., about 2,300 feet north of the southeast corner thereof, and continuing southwesterly about 620 feet to a line corresponding with Market Street in the Town of Kirkland, produced North, thence south about 3,600 feet; thence southwesterly and along the shore of the lake in front of Kirkland and Secs. 8 and 17, T. 25 N., R. 5 E.; thence southeasterly to a connection with the Renton-Bothell Road at about the southeast corner of Sec. 20, T. 25 N., R. 5 E.

Such portions of this highway as are included in the plan for the development of the waterfront, as shown on Map No. 15, are to be of the widths there shown.

Two branches of this highway are proposed, each 84 feet wide, one extending east from Juanita Bay to the Renton-Bothell Road, the other begins at the ferry landing at Kirkland and extends east along Lake Avenue to Maple Avenue; thence north along Maple Avenue (crossing under the Northern Pacific Railway at about Jefferson Street), and paralleling the said railway right-of-way, connecting with the Renton-Bothell Highway in Sec. 33, T. 26 N., R. 5 E.

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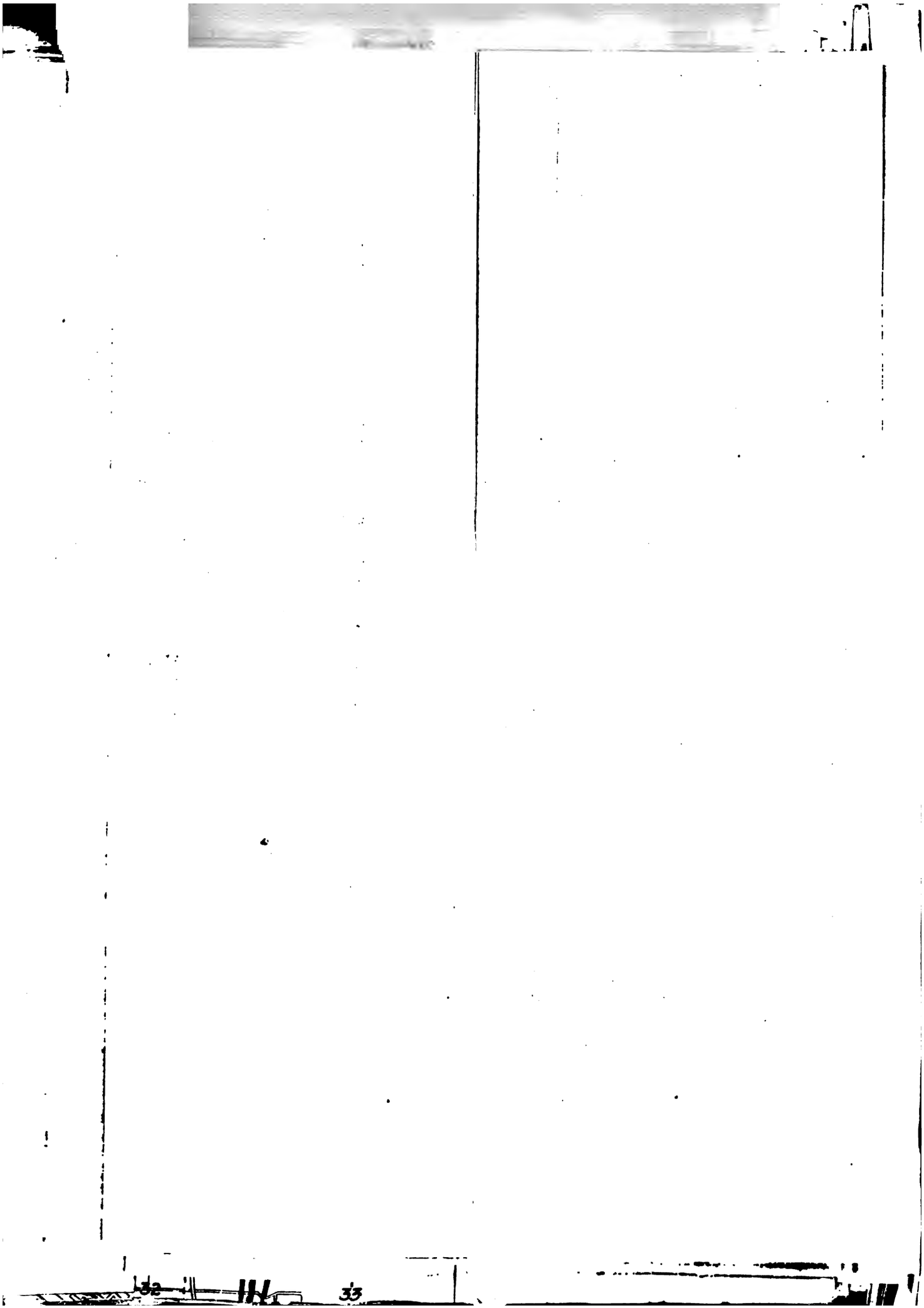
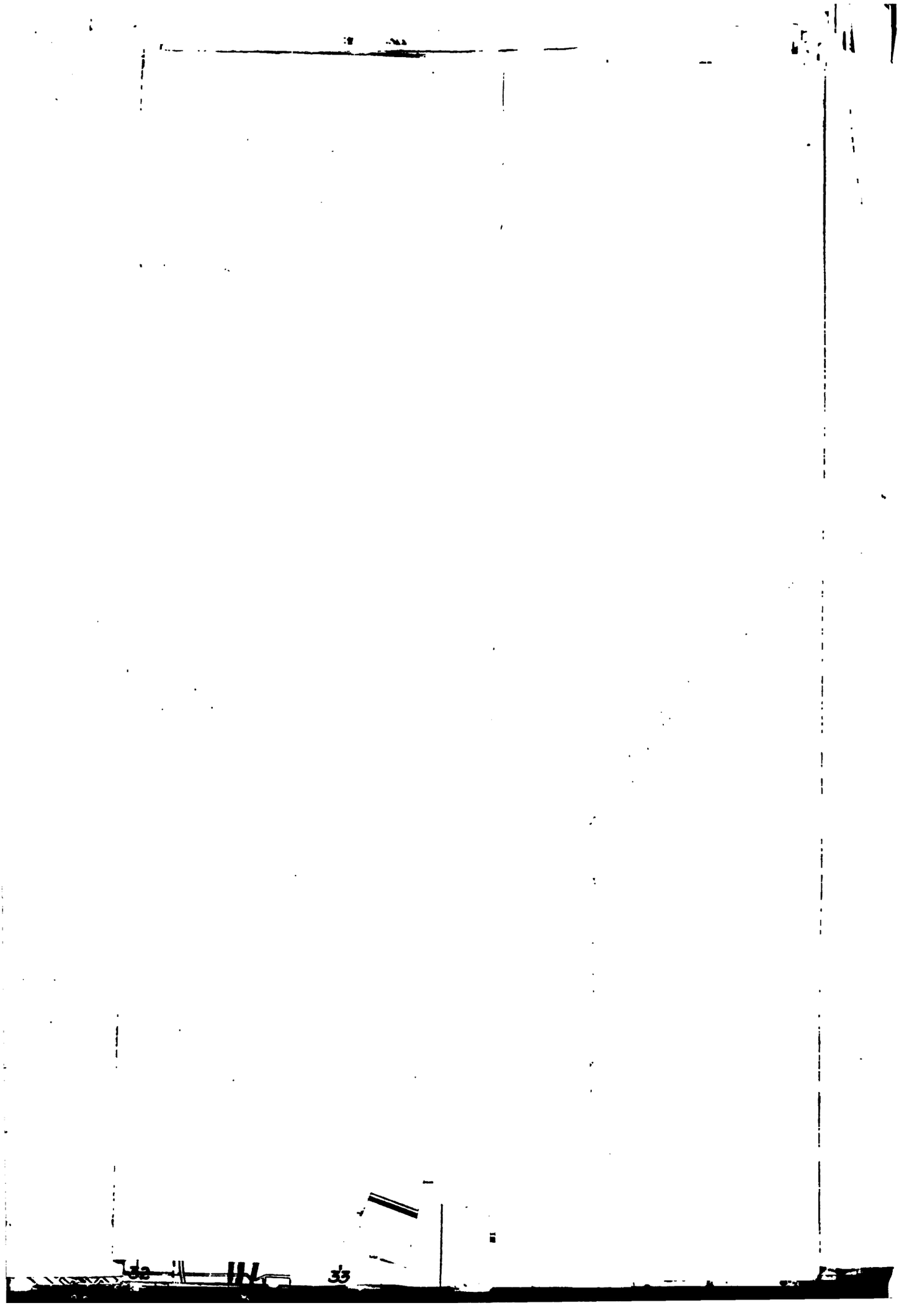
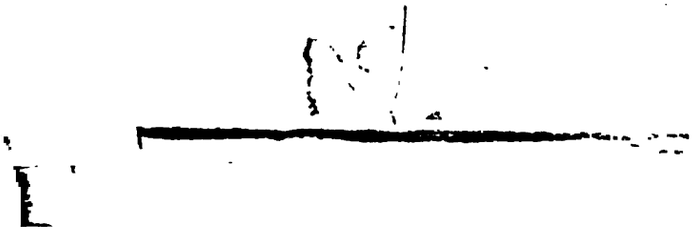
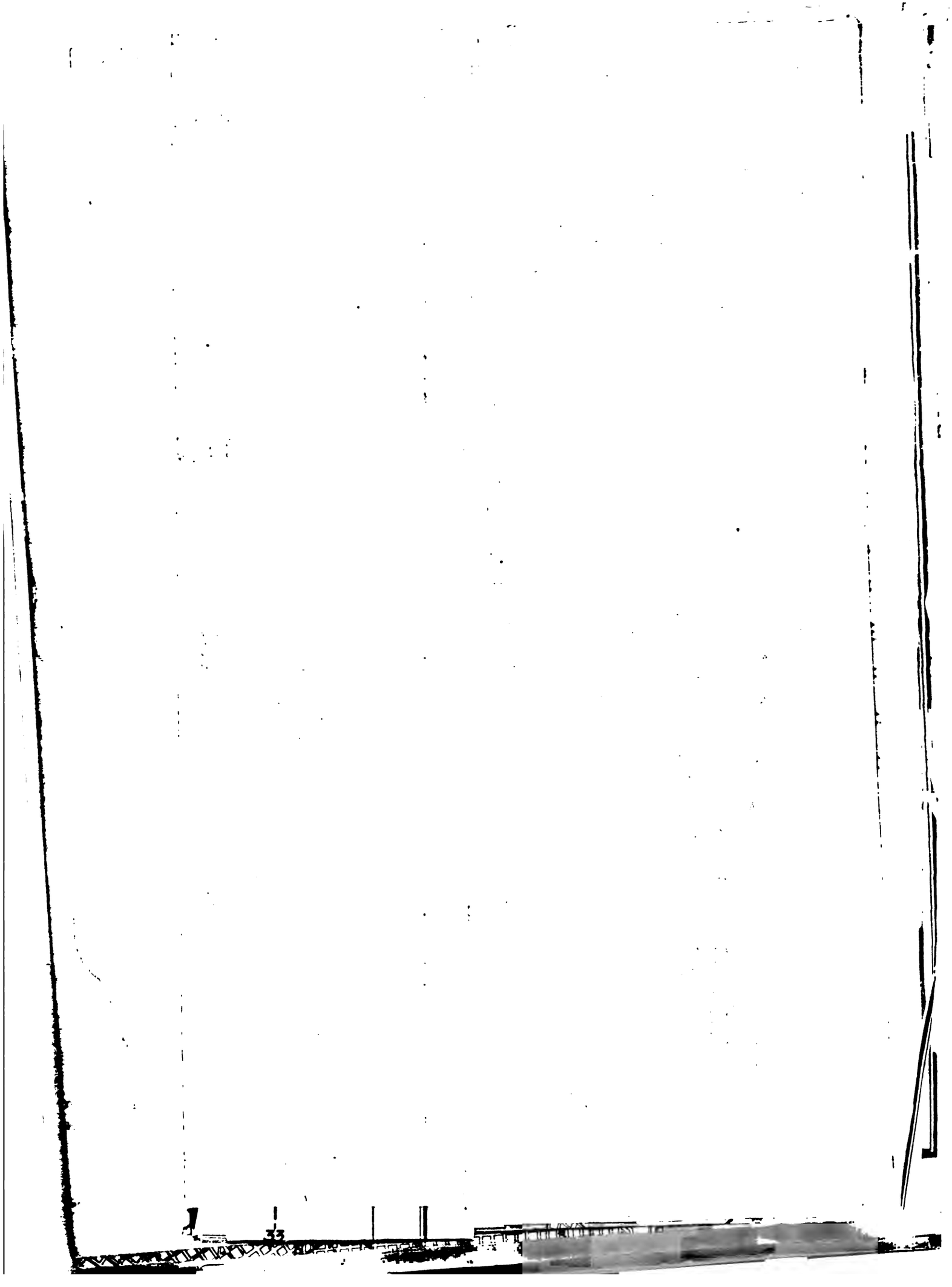
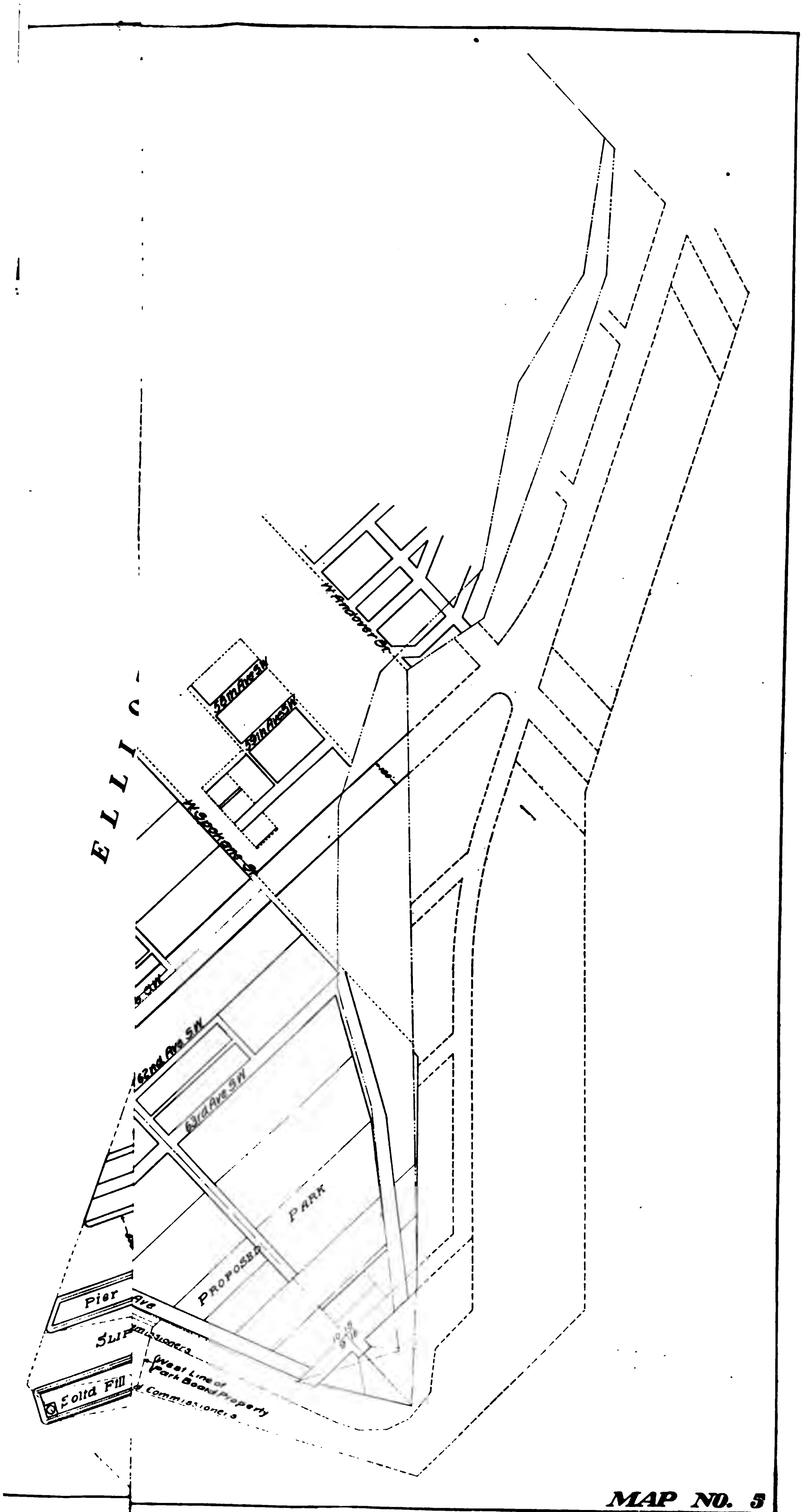




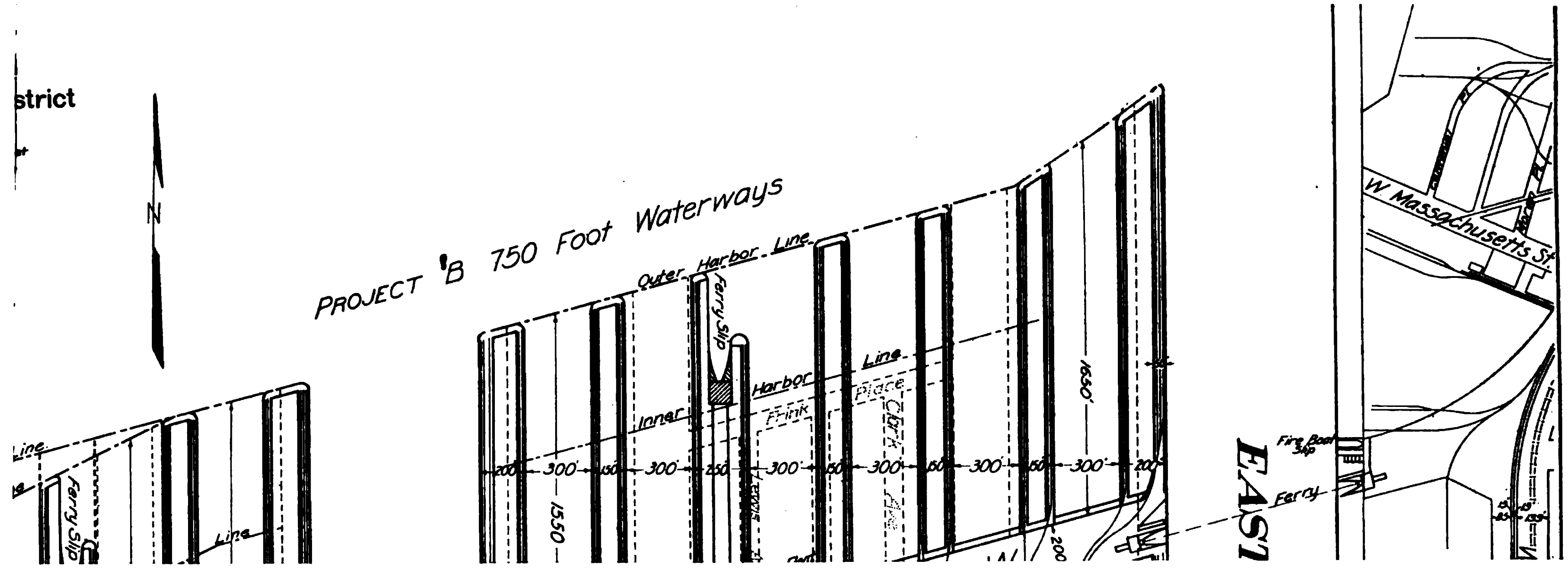


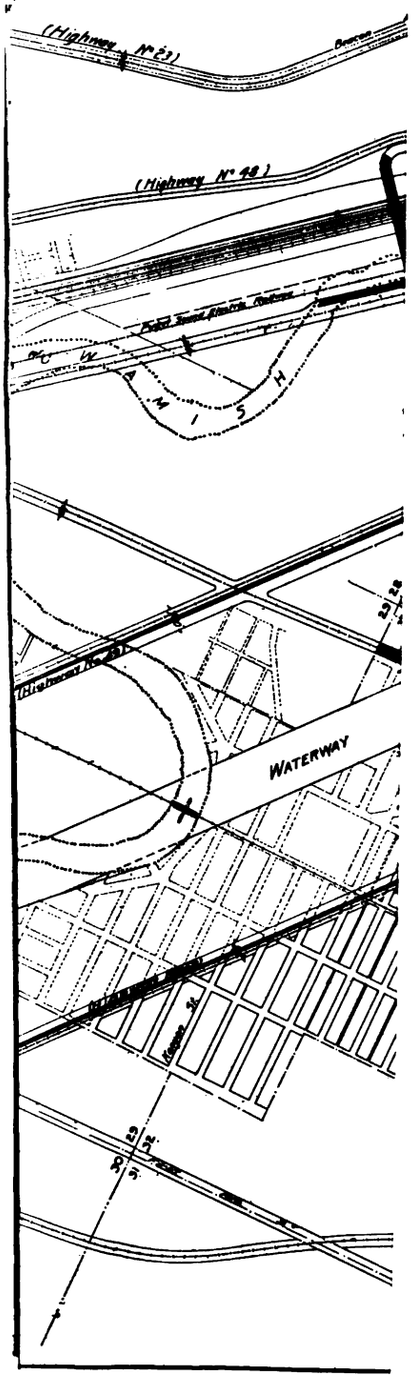


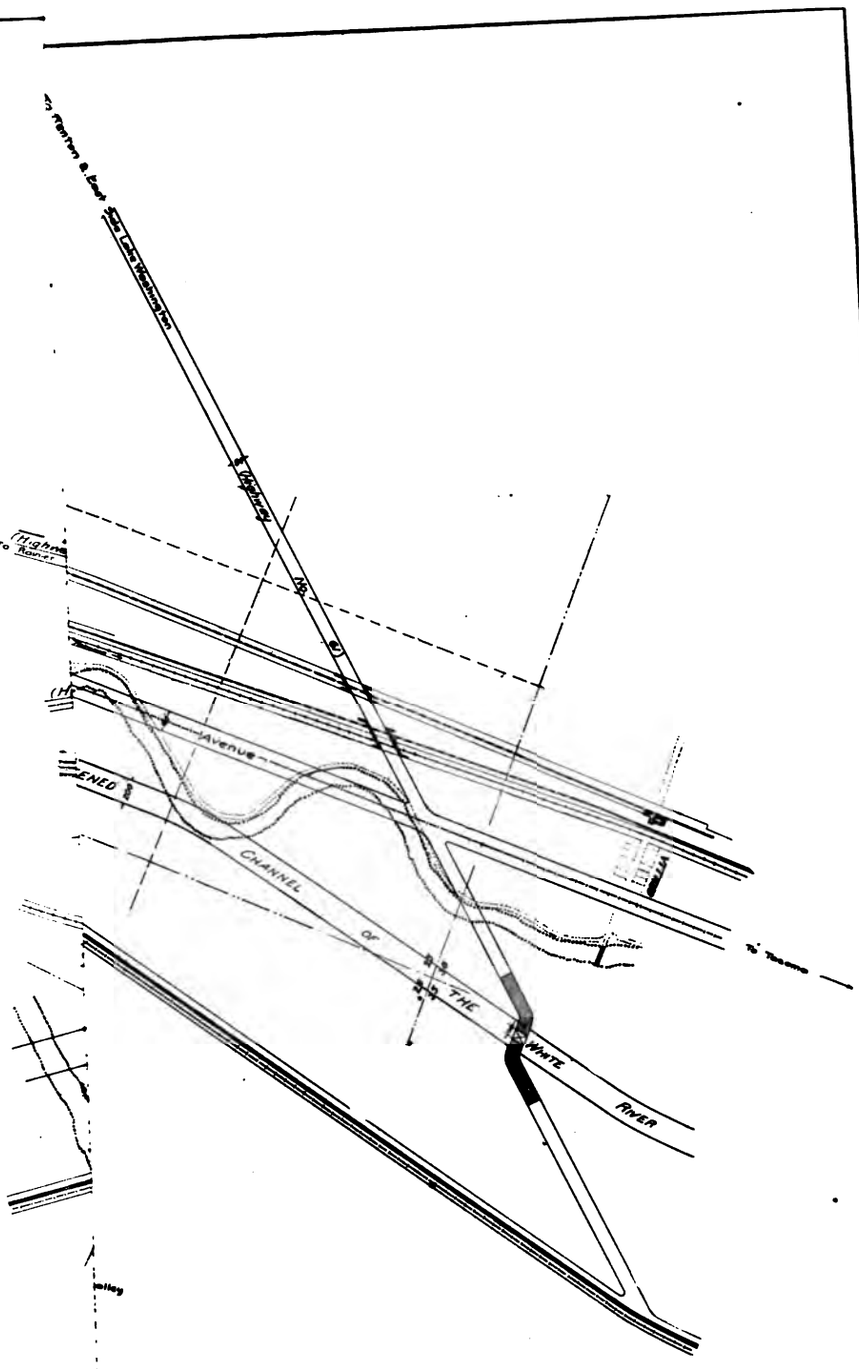


ELLI
W. Andover St.
58th Ave SW
59th Ave SW
W. Spokane St.
62nd Ave SW
63rd Ave SW
PROPOSED PARK
Pier
SLIP
Solid Fill
West Line of Park Board Property

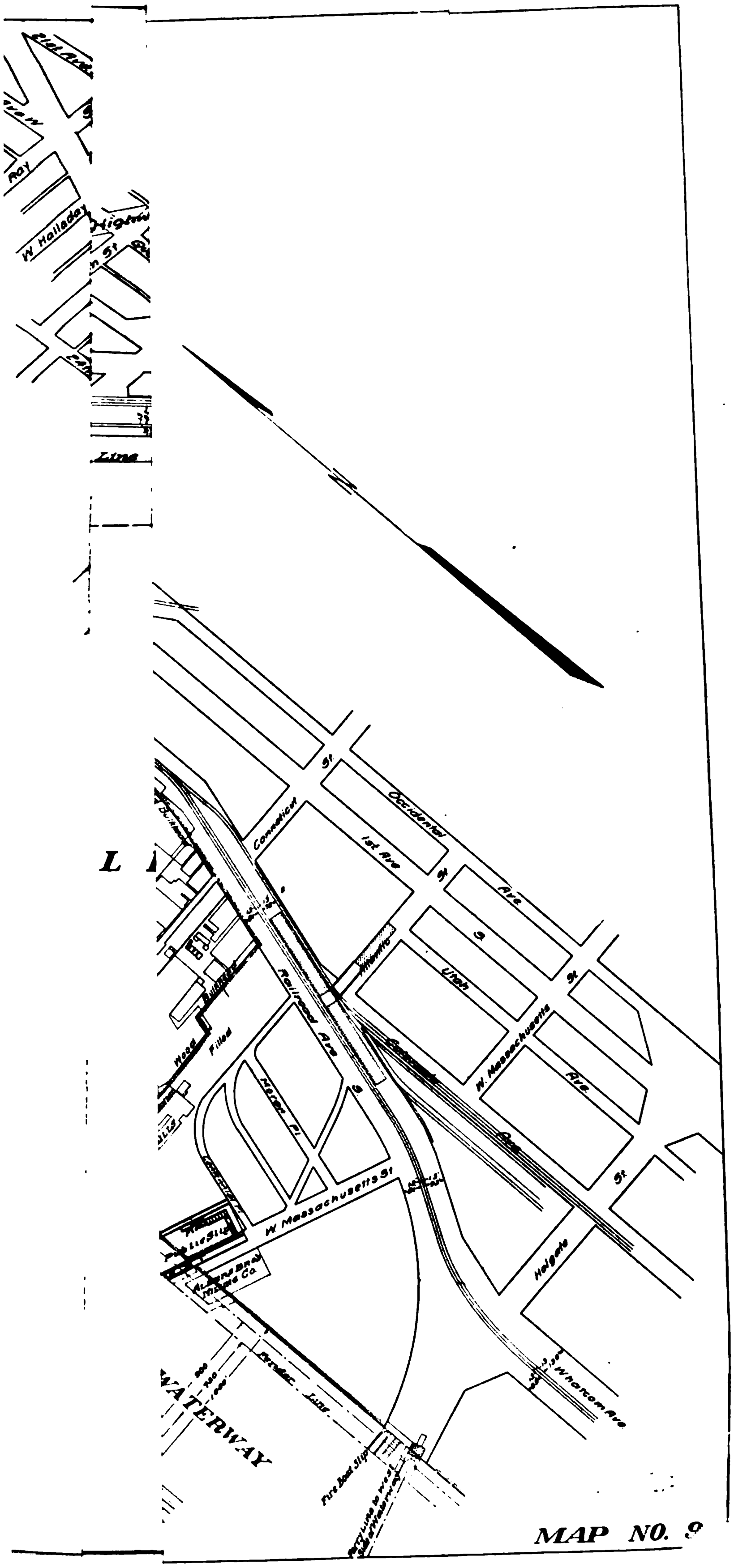
MAP NO. 5


strict
N
PROJECT B 750 Foot Waterways
Outer Harbor Line
Inner Harbor Line
Ferry Slip
Frink Place
Clark Ave
1650'
1550
200
300
150
250
W Massachusetts St
Fire Boat Slip
Ferry
EAST

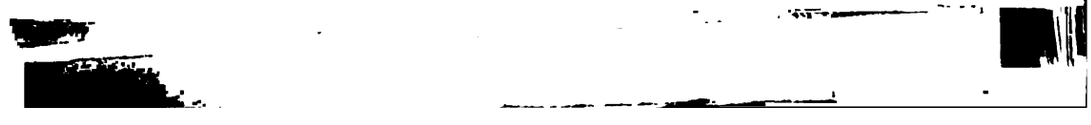

(Highway N° 20)
(Highway N° 40)
WATERWAY

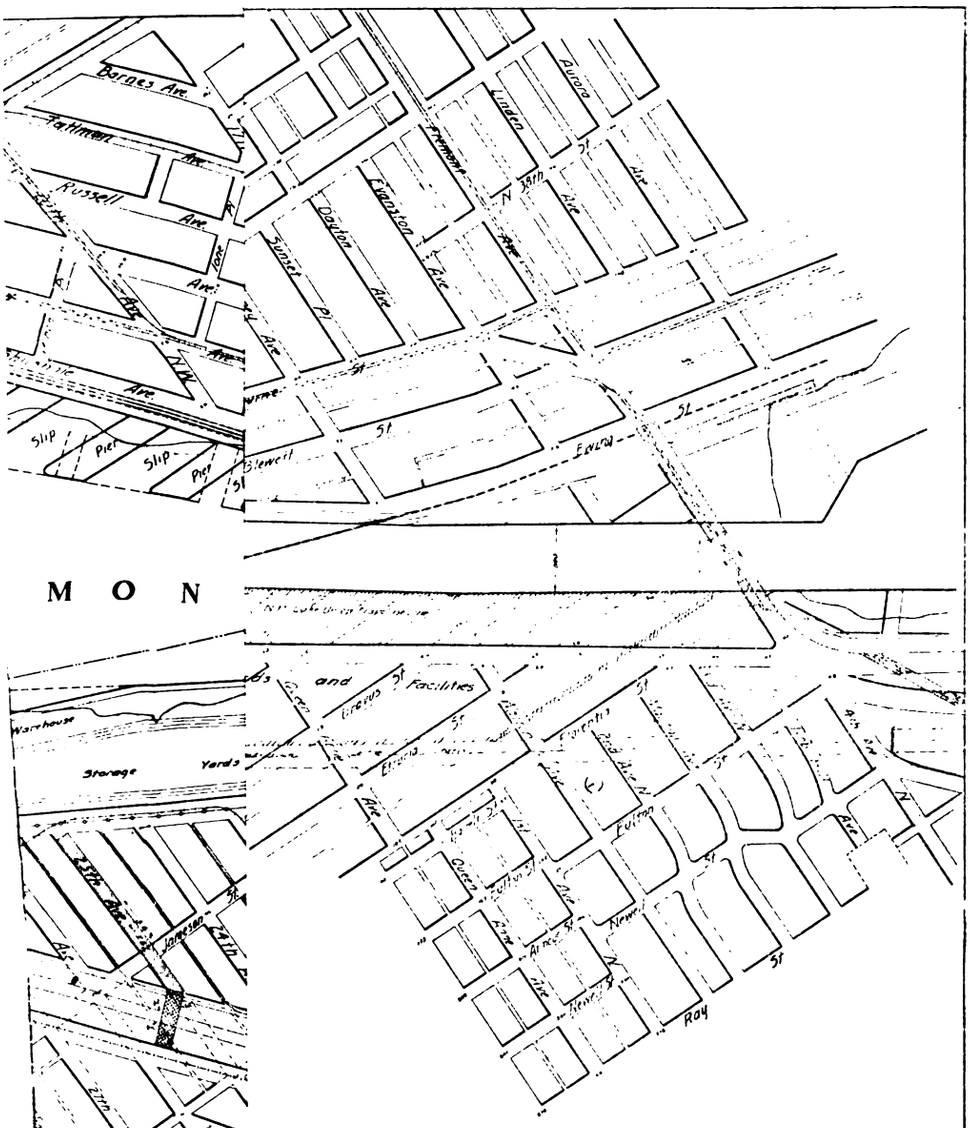


MAP NO. 8


Occidental Ave
Connecticut St
1st Ave
Utah
W Massachusetts St
Railroad Ave
Filled
W Massachusetts St
Holgate
St
Whatcom Ave
Fire Boat Slip
WATERWAY
Line
W Halladay
Roy
Line

MAP NO. 9



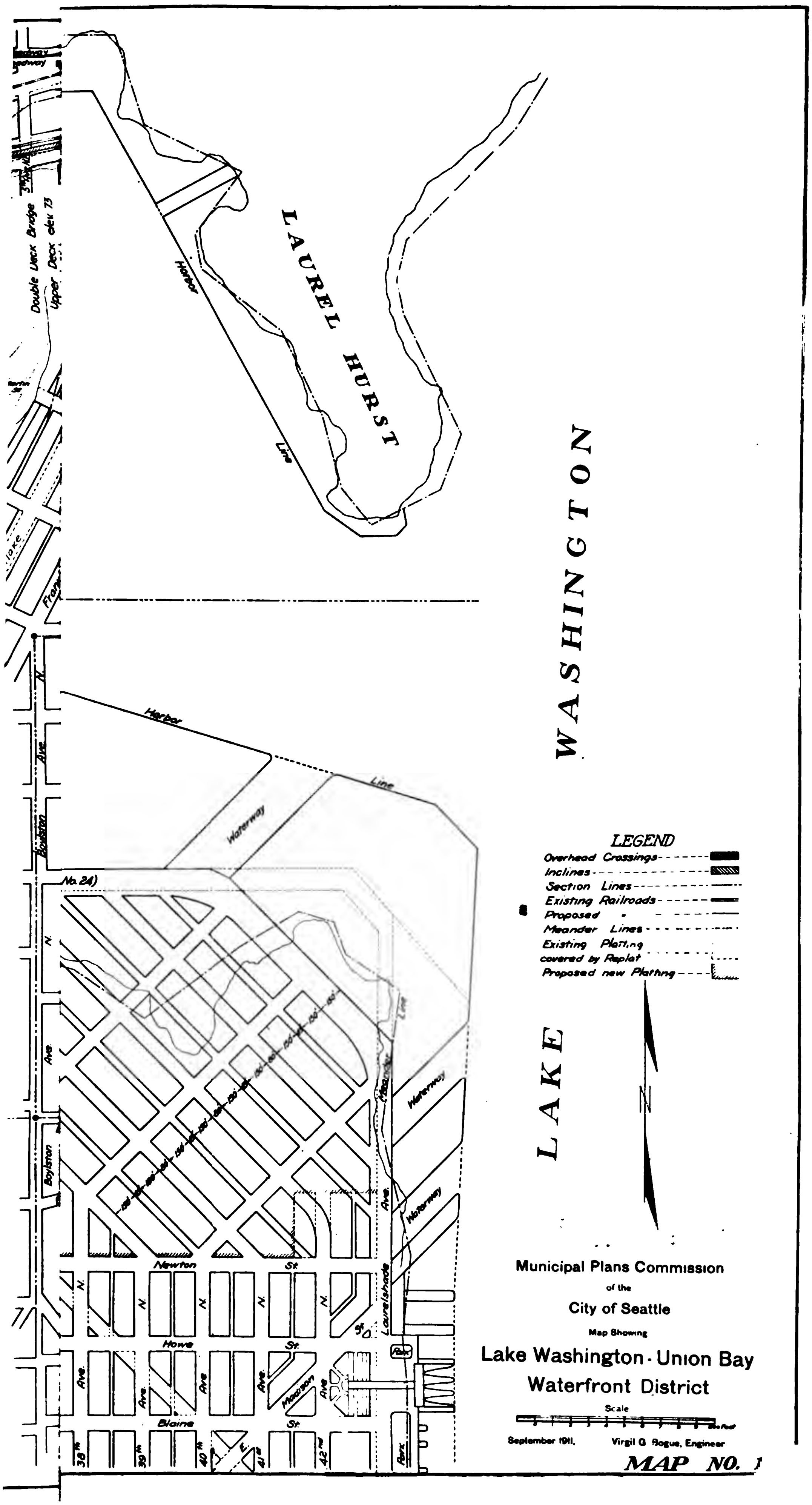


M O N

Municipal Plans Commission
of the
City of Seattle.
Map Showing
Ballard Water Front District
Scale
September 1911. Virgil G. Bogue, Engineer.

MAP NO

38'
39'
40'
41'
42'
Park
September 1911.



LAUREL HURST
Harbor Line
LAKE WASHINGTON
Harbor Line
Waterway
Waterway
Waterway
Meander Line
Double Deck Bridge
Boylston Ave. N.
Newton St.
Howe St.
Blaine St.
Laurelshade Ave.
Madison
Park
LEGEND
Overhead Crossings
Inclines
Section Lines
Existing Railroads
Proposed
Meander Lines
Existing Platting covered by Replat
Proposed new Platting
Municipal Plans Commission
of the
City of Seattle
Map Showing
Lake Washington - Union Bay
Waterfront District
Scale
September 1911.
Virgil G. Bogue, Engineer
MAP NO.

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Map 8
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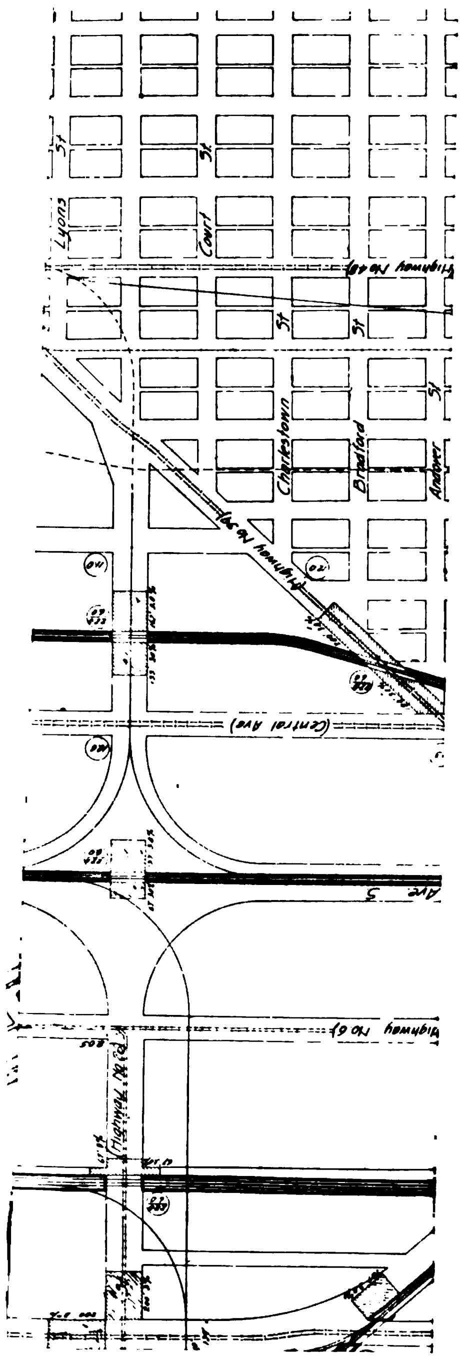
Sca
Vi

Area covered by the Report of Virgil G. Bogue



Lyons St
Court St
Charlestown St
Bradford St
Andover St
(Central Ave)